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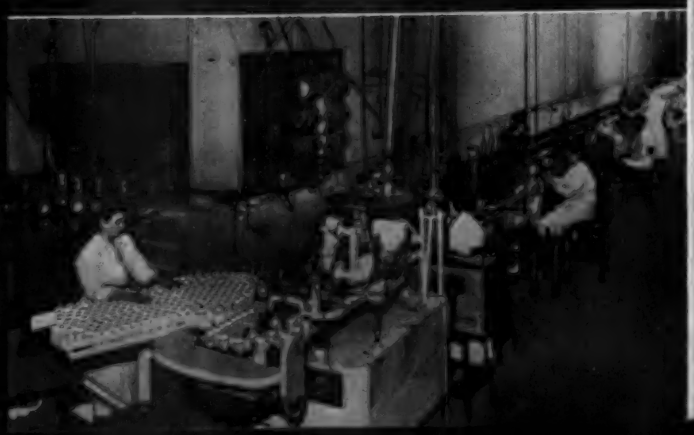
AEROSOL AGE

THE MAGAZINE OF PRESSURE PACKAGING



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MAY, 1958 VOL. 3, No. 5

AEROSOL AGE

The magazine of pressure packaging

THIS MONTH'S COVER

luid Chemical Co., Newark, N. J. : probably the only custom filler the industry with two tooth- aste lines (using nitrogen propel- nt) going full blast. Either line n be converted to food filling nd one, the line in the lower hotograph, can be converted to ctane-propane filling. For more n Fluid Chemical, see story be- nning on page 28.

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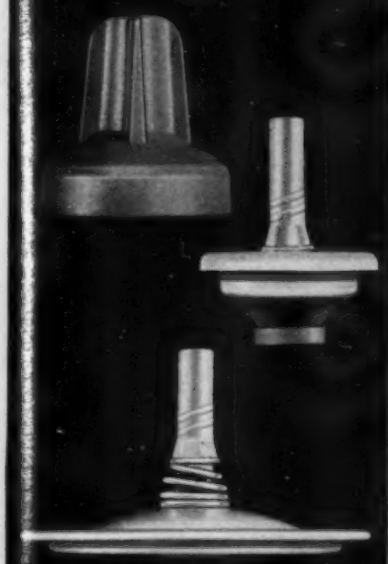

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from the

EDITOR'S MAILBAG

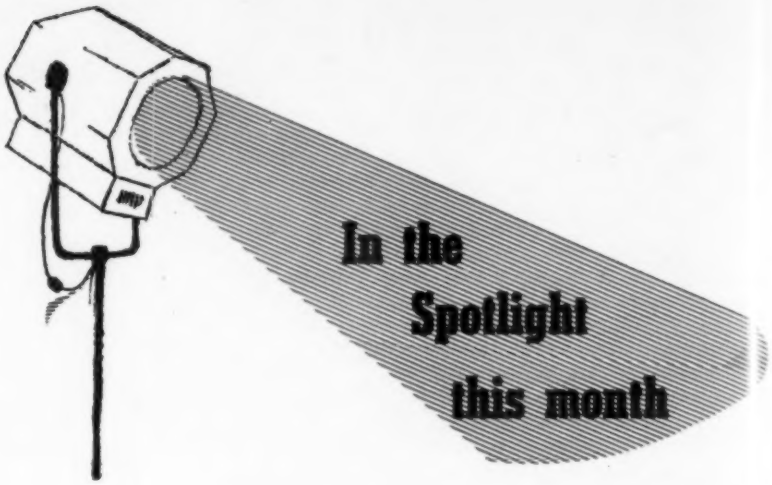
To the Editor:

At the risk of monopolizing your "Editor's Mail Bag" column, I must correct two erroneous statements in Thomas J. Mahon's letter to the editor appearing in the April issue of *Aerosol Age*.

Mr. Mahon states that "when a patient swallows a tablet the concentration of medicament is predetermined and beyond the control of the patient. The same is true of an injectable; the patient receives the full dosage." The fact is ignored that, even though the total dosage is delivered by a tablet, the amount of medication absorbed into the blood stream, where it is necessary for effective therapy, is quite variable in tablet dosage forms. This is due in part to the destructive effect of gastric and intestinal fluids on the medication and because of the variability in absorption of drugs through the gastro-intestinal membrane. Most orally administered drugs must be given in many times the injected dose in order to achieve a blood level comparable to a parenterally administered dose. This is precisely the advantage of the 'Medihaler'; the lung can be used as a portal of entry for a measured dose of medication which when taken by mouth might be too slow acting or entirely ineffective.

Regarding his detailed discussion of a *normal* breathing rate and the fractional seconds of each phase, it should be pointed out that a subject inspiring aerosol medication does not breath at a normal rate, but will adjust his inspiration cycle to achieve the maximum benefits. I need only direct Mr. Mahon's attention to his own statement on Page 47 of the same issue of *Aerosol Age*. In a description of the use of 'Nebuhalent' nebulizer he is quoted as saying, "The patient must be taught to hold his breath for a second or two after breathing in the medication and then swallow." This statement is the key to the successful application of *any* aerosol therapy. All asthmatic patients must be taught the proper use of a nebulizer, whether it be a hand bulb, a dual-chamber type, or a 'Medihaler'. The chief advantage of the metered dose 'Medihaler' is that the patient is sure he will receive the same dose uncontaminated and not air oxidized, each time he depresses the valve. He does not have to rely upon some nebulous timing mechanism of his own.

Irving Porush
Head of Pharmaceutical Development
RIKER LABORATORIES, INC.
Los Angeles, Calif.



● **Fluid Chemical Co.** . . . One of the largest custom fillers in the world opens its well-equipped plant to a camera and descriptive tour. Story and photographs begin on page 28.

● **Industry Spokesmen Discount Conclusions Of Hair Spray Article** . . . Another aerosol industry controversy, this one about the relative safety of aerosol hair sprays, is discussed on page 34.

● **CSMA Lists Schedule For Cincinnati Meeting** . . . Product surveys, food aerosols, and insecticides and insect repellents highlight meeting schedule for convention, appearing on page 35.

● **Precision Valve Co.** . . . A pictorial visit to the plant of the largest aerosol valve producer (and chief developer of the nitrogen valve) begins on page 36.

● **Handling Of Pressurized Containers** . . . R. A. Fulton, pioneer USDA aerosol researcher, writes of some of the precautions to take in handling pressure containers in production and research. Story begins on page 44.

● **German Aerosol Group Meets** . . . The question of organization of the European aerosol industry, currently a key point of discussion here, receives added impetus with an exclusive **Aerosol Age** report beginning on page 49.

● **Stainless Steel Aerosol Containers** . . . On page 52, Philip Meshberg, a developer of stainless steel for small size aerosol containers, writes about the original valve crimping and molding problems encountered with this new container material.

● **Nitrogen Propellants** . . . This exciting new aerosol development, called "the most important single development in the packaging industry in several decades," is discussed by W. G. Delmore on page 55.

EDITORIALS

The Hair Spray Question . . .

The aerosol industry has recently been very much concerned with a medical article about pressurized hair sprays. The article, appearing in the March issue of the highly-regarded *New England Journal of Medicine,* was written by three doctors from St. Louis, and is particularly important because hair sprays presently constitute the best selling product type in the industry. In the article the authors indicate that PVP, dextran, CMC, and other polymers commonly used in hair sprays may contribute toward inflammatory reactions in the lungs, and possibly in other organs of the body.

The main objection we have to the article is that, if it was published to prove that hair sprays constitute any kind of hazard, it hasn't done so at all. A meager two study cases are reported, neither of them sufficiently documented or carefully enough controlled to point the finger at hair sprays alone.

For instance, at least one of the women observed admitted smoking a package of cigarettes a day. To correct the suspicious x-ray symptoms, the woman was advised to give up the use of her hair spray. However, it is nowhere recorded in the article whether or not she was also advised to give up smoking, or whether she actually did! Also, there is no mention in the report about the physical environment in which the study subjects lived (to eliminate the possibility of air pollution being at least a contributing factor). In short, there are far too many loose ends to draw any but the most hasty conclusions.

As has been pointed out by another trade magazine, *Drug & Cosmetic Industry* (see page 34 of this issue) the logical way to have gone about proving that hair sprays *can* cause damage to the respiratory system would have been to employ a whole series of carefully controlled animal tests. For instance, use of the closed aquarium device for test animals would have been the logical way to prove conclusively whether or not hair sprays actually do contribute to cancer in warm blooded animals.

This type of experiment is relatively easy to set up, fairly simple to supervise, and (probably most important) its results can prove conclusively what the experimenter is trying to find out. As has been previously mentioned, the St. Louis researchers reported none of this type of tests in their article.

It is not our object here to criticize the basic argument of the *Journal* article; for, if, as the authors contend the ingredients in hair sprays *are* retained in the vital organs of the body (and can cause real harm), the industry should know about it and should undertake clinical studies to determine the validity of the St. Louis findings.

On the basis of the insufficient data presented, the article probably shouldn't have been published at all. The conclusions were quickly picked up by newspaper feature writers in several major cities and given full "Sunday supplement" treatment—without (of course) reference to some of the technical shortcomings outlined above. Now, in the minds of many actual and potential users of the product, there may lurk the fear that use of hair sprays does present physical hazards, and that perhaps the benefit derived from the use of this product is hardly worth the risk.

In order to protect itself from any long range effects of this article to the consumer market, documented data (in the same periodical or type of periodical) should be quickly published to refute the claims made. Or, if there is some element of truth in the findings, suggestions should be offered on how the danger can be minimized, or what is being done to correct the situation.

FLUID CHEMICAL CO.

Skilled materials handling, research, production techniques, and quality control make this pioneer custom packager a leader in a relatively new packaging activity.

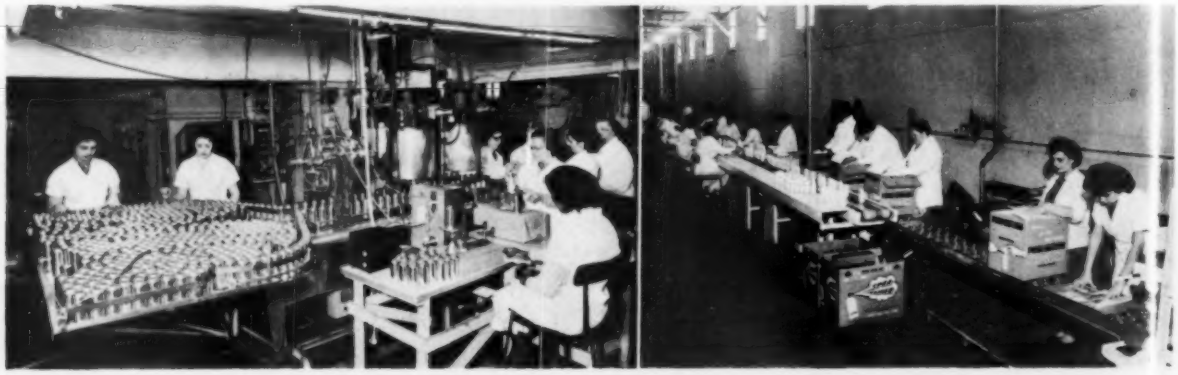
ONE of the largest and best equipped contract packaging plants in the United States, and hence one of the largest in the world, is located on a busy spur of the Erie Railroad in industrial Newark, N. J. Here the huge plant of Fluid Chemical Co., working a brisk two-shift production schedule, has built up its aerosol filling capacity to an almost staggering total of 400,000 containers per day, or 100 million a year. On a stepped-up three-shift schedule, this figure can be increased to approximately 150 million a year. When faced with production figures of this magnitude, even the most hardened cynic about aerosol packaging will be forced to admit that contract packaging of aerosol products has truly become "big business," and no longer needs to accept second place to any other activity in the packaging industry.

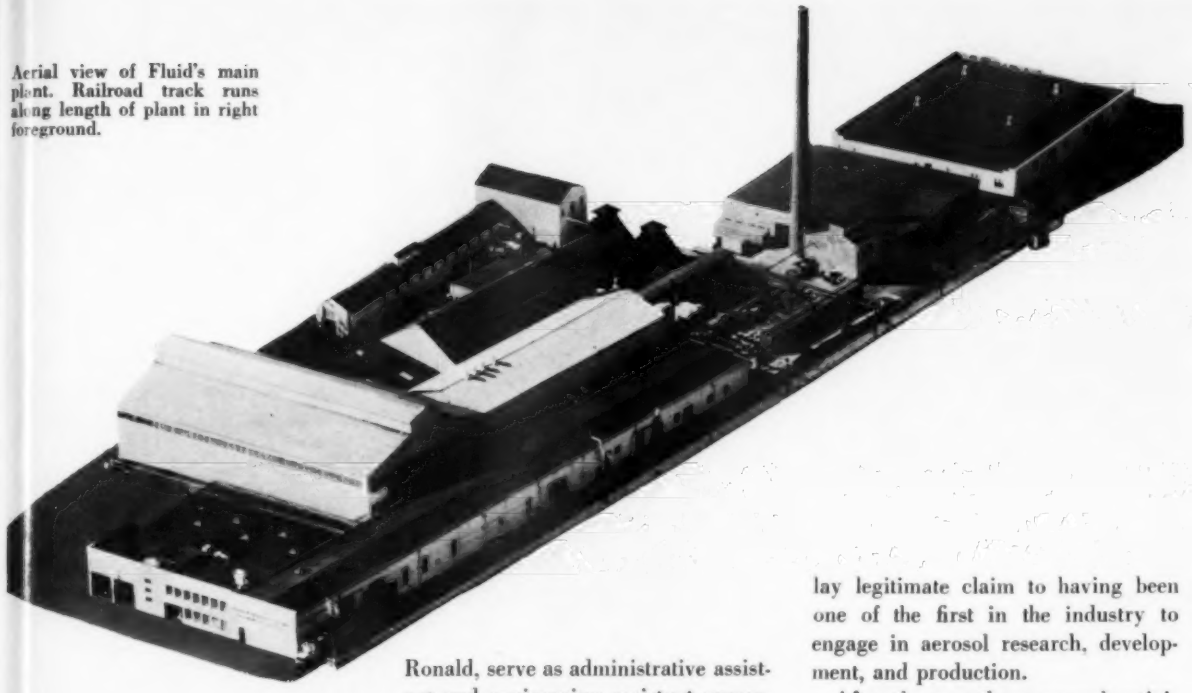
In Fluid's four block square main plant (total area 200,000 square feet, 150,000 square feet of which is covered) can be found every single packaging activity in the aerosol industry: conventional cold and pressure filling lines as well as nitrogen and butane-propane lines. In fact, one brief tour of Fluid's plant is enough to give anyone a good grounding in all phases of pressurized packaging.

The company is currently operating five double aerosol filling lines (all of which can be converted to considerably higher capacity). Two of these lines can be used for the full range of sizes of both metal and glass containers, and, at the time of this writing, two more of the lines are being used full time to package nitrogen-powered toothpaste products for two of the leading dentrifice marketers in the country. The vast variety of products to come off the other lines includes all types of glass and specialty container products, plus every conceivable product type so far packaged in an aerosol container.

But the striking thing about the entire Fluid operation is not so much its variety, but the fact that everything is handled with such professional finesse. There are no traces of the practice, so common in certain areas of the aerosol industry, of the entire operation revolving about (and depending solely upon) one pivotal or key executive. In research and quality control, in materials handling, in the actual formulation and production operations, in warehousing and shipping (all the essential activities of any qualified contract packaging

One of Fluid's five high speed aerosol filling lines. The two workers in the right foreground are quality control personnel. Right: The end of one of the two nitrogen toothpaste lines. (The beginning of this same line is shown in the lower photo on the front cover).





Aerial view of Fluid's main plant. Railroad track runs along length of plant in right foreground.

company) automation, big business methods, and advanced techniques have long ago supplanted small-time operations. The various duties of the capable executive staff are carefully and actively supervised by Edmund D. Bennett, company president.

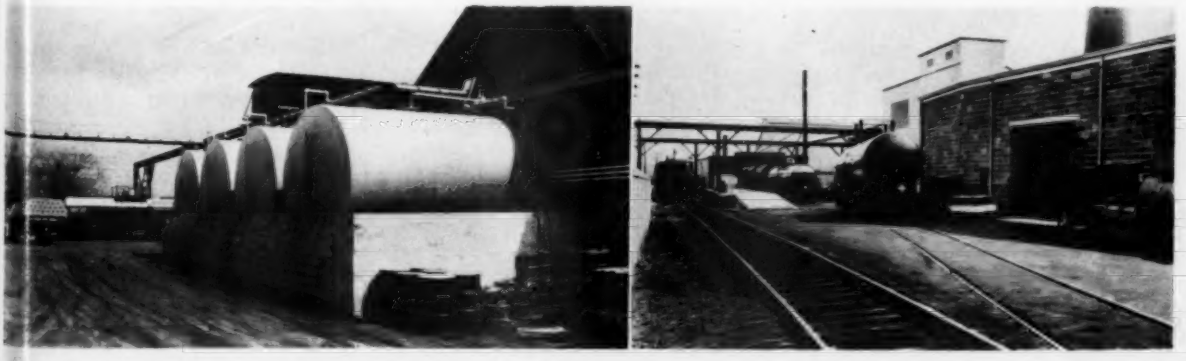
Mr. Bennett's two brothers, Angelo and Mario, assist in the active operation of the huge plant—Angelo as plant manager and Mario as director of traffic. Aldo S. Pero is vice-president in charge of sales, and Maria Wiener, brilliant foreign-educated chemical engineer, is the company's technical director. Mr. Bennett's two sons, Edmund, Jr. and Ronald, serve as administrative assistant and engineering assistant respectively.

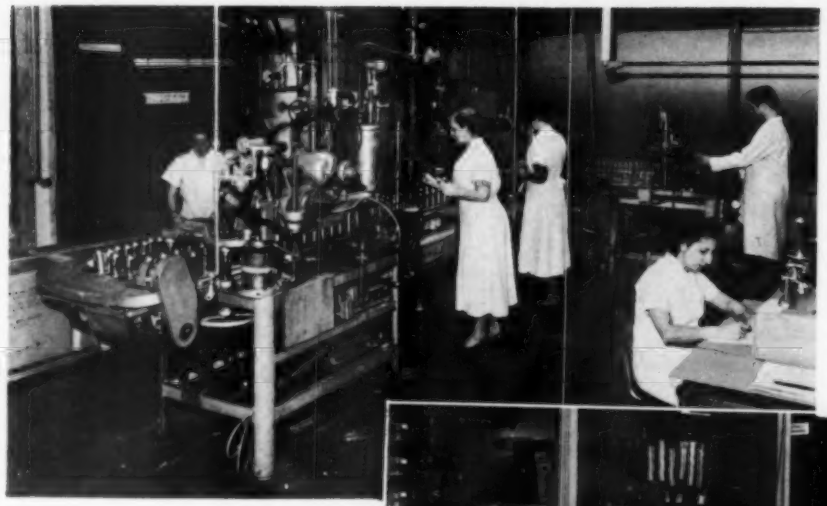
THE company had its origin way back in 1919, in Rome, Italy long before there was any such thing as an aerosol. It was moved to the U. S. that same year and in 1921 Philip Benedetti, father of Fluid's present chief executive, moved the business first to Trenton and later to Newark, N. J. and it grew slowly through the Twenties and Thirties. During World War II the company became interested in aerosol filling for government military contracts, and by the end of the war was one of the few contract packagers filling insecticides in low pressure containers. Fluid can thus lay legitimate claim to having been one of the first in the industry to engage in aerosol research, development, and production.

After the war these aerosol activities, which had been concentrated almost exclusively on insecticides, were extended to cosmetics, industrial products, and a wide variety of household products. Today they extend to dentrifices, foods, and the entire range of present and potential aerosol product types. Among the "firsts" to which Fluid can lay claim is the first aerosol snow, the first automatic glass aerosol production line, and numerous others. Also the company believes that last year it probably filled one-third of all aerosol hair sprays, and more glass aerosol containers than any other contract packager.

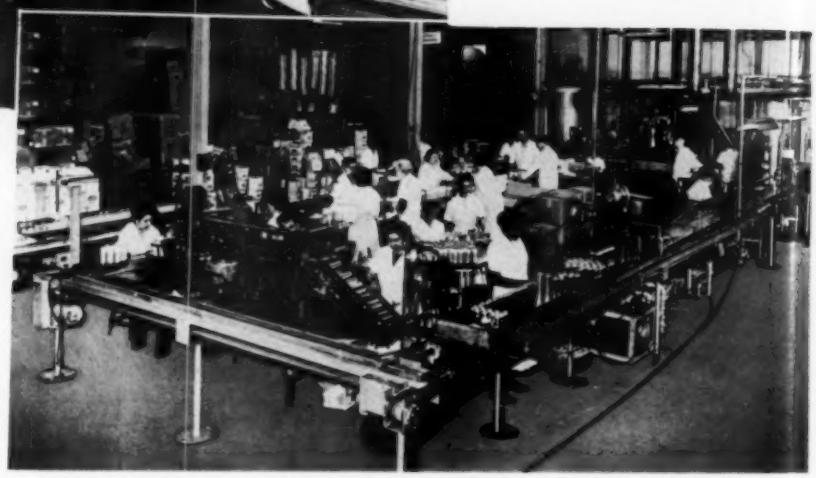
Fluid's "big-business" or professional way of conducting its busi-

Some of the company's outside storage facilities. In the left rear is something relatively new to the industry, a nitrogen tank truck. At right: The track at left is the rail siding running the length of the main plant. The spur at right runs directly into the plant property.





Two views of one of Fluid's cold-pressure filling lines. At left, the filling and crimping equipment.



At right of photo is the water bath, in the center the labeler, and in the left rear are personnel applying caps and cartoning the finished containers.

ness is probably manifested most strongly in materials handling, production techniques, advanced record keeping methods and research and quality control. In these three activities the company probably excels most other custom packagers in the industry.

Since Fluid uses fantastic amounts of containers, valves, component parts, raw materials, etc., and at the same time ships up to half a million finished containers in a single day, materials handling is of paramount importance. Through development of its unique system Fluid has eliminated the possibility of lost or strayed shipments of parts and finished products, and all the other myriad problems that beset any large-scale shipper.

The company's problem is even more complicated by the fact that it has such numerous shipping facilities: a four-block railroad siding plus an additional railroad spur directly into its property, four automatic-lift truck delivery bays, and numerous conventional loading platforms and docks. Since the company makes nothing of its own (either in the raw material or finished product category), shipments of materials entering the plant, in both quantity and variety, are staggering indeed. For instance, Fluid is one of the largest alcohol buyers in New Jersey, a state that is a leader in the number of chemical plants within its borders. Fluid is also one of the largest propellant users in the aerosol industry, and is the third largest user of the Erie Railroad's services in that part of the state. In addition to these rail facilities, the company is serviced by 20 to 30 private trucking companies.

Part of the company's huge warehouse. All freight handling is done with fork-lift trucks.

Within the last six months Fluid has developed an inventory and materials handling system that is unique in the aerosol industry. Nerve center of the system is an automatic IBM inventory control system, which is serviced and fed information by a battery of teletype machines.

As a shipment enters or leaves any plant area, a copy of the paper work covering that particular shipment is

Fluid's research staff holds one of its frequent discussions to iron out formulation problems. Maria Wiener, technical director, is at right.

Part of the laboratory. Here a careful check is kept on quality control within the plant, and test formulations are made up and studied.

transmitted via multiple teletype to a central control room. Here the information is automatically compiled into the general accounting system, thus eliminating the chance of a lost or a strayed shipment. In tracking down any missing cargo that has entered or been shipped from the plant, it can be carefully documented by a check of either the shipper, by product type, or by chronological cross-checking.

According to Al Pero, vice-president, the efficient handling of materials has been one of the secrets of the company's success. "Because it has grown so fast," he points out, "the industry generally is somewhat weak in the whole field of materials handling and accounting. We think our new control system can solve most of these shortcomings."

Fluid also has another unique communications system that assists greatly in plant operational efficiency. This is an entirely new interior telephone system—a closed circuit system entirely separate from the company's outside switchboard. This unit implements plant activities within the huge plant, and also gives supervisory personnel quick communication to the company's extended areas, one of which is located a long city block away from the main plant.

FLUID'S aerosol production lines are also somewhat special, since each is operated more or less as an independent filling plant, each with its own filling line personnel and its own supervisor. The principal control medium for these diversified filling operations is the laboratory and quality control department, which closely supervises quality control on every filling line; and of course, materials handling, which is responsible for component and raw material availability and the pick-up and shipment of the finished products.

The company's Summer Avenue plant, one block away from the main plant, is devoted exclusively to drug, pharmaceutical, and cosmetic filling; and most of the glass bottle filling is done at this plant. The stainless steel

One of the company's two automatic loading docks, each of which has two adjustable loading platforms.

Top: The company's new teletype inventory system.

Bottom: The interior product mixing tanks have automatic controls for premixing of product prior to introduction into the filling lines.

aerosol filling line, which can be operated either as a cold or pressure fill unit (for either glass or metal containers) is equipped with a pasteurization unit for special product treatment. Also in this compact plant is a polyethylene tube filling line. This plant has its own railroad siding and truck loading bays.

Another cold filling line is located in the main plant, this one a special high-speed unit capable of producing over 50,000 units per eight hour shift. This is currently being used to package hair sprays for leading marketers, as well as a wide variety of other product types. Another pressure and cold fill unit located nearby is currently being used to fill a color hair spray, room deodorants, aerosol colognes, etc.

Though both these lines are made up of mostly standard type filling equipment (with a few special but minor innovations) this second line in the main plant has a highly efficient propellant charger designed and built by Fluid's engineering staff. This particular line is especially suited for complicated formulations which require both cold and pressure filling steps on the same product.

However, in this period of such intense interest in the toothpaste and food field, Fluid's aerosol lines of greatest interest are its two newest ones. One brand-new one is set up in the company's explosion-proof building (which has been designed and constructed especially for butane-propane aerosol filling). In length and in number of personnel this particular line is probably the longest and the best staffed in the industry. It is currently being used to package nitrogen-powered toothpaste for a leading national marketer.

Late in March the company completed its fifth aerosol line, a large high-speed pressure unit built especially for chocolate syrups, sauces, and other food products. This too is currently being used for toothpaste, again for another of the leading national marketers. In both these new lines, as in all others the equipment is stainless steel, but the food unit is supplied with an additional refinement, for with it the company has built a complicated can cooling bath and heat exchanger. This will be used to pre-treat special food products.

Conventional liquid filling, to which Fluid currently devotes about 25% of its production, is housed in two separate buildings near the center of the main plant. These multiple facilities can handle metal cans, glass bottles, pails, drums, plastic and metal tubes, plastic bottles, and virtually all commonly used container types. One entire filling operation is devoted exclusively to filling "Lux" liquid detergent. For this operation the empty cans arrive by freight car, are filled on a highspeed unit, placed in cartons, and are then shipped out immediately in a continuous operation in which materials never touch the floor. Warehousing is eliminated!

The other liquid filling operation actually comprises three separate and distinct lines. One is a high-speed unit for filling anti-freeze and other specialty automotive products. Another is a unit for filling hard-to-handle battery acid into various sized plastic containers. And the third, almost a plant in itself, is a complete unit for filling liquids, pastes, etc. for all the manufacturing plants of a leading can manufacturer. This operation is something of a captive unit, since Fluid has taken over the can company's own manufacturing facilities and is operating them exclusively for that company.

Adjacent to this liquid filling operation is a water purification unit that can be used to pipe deionized water for aerosol and liquid formulations anywhere in the plant.

Fluid's quality control and laboratory facilities are particularly in-

pressive. The large well equipped, air-conditioned laboratory, located on the second floor of the main building, has been the scene of a good many developments and experiments to improve aerosol formulations, product compatibility, etc. Under the direction of Maria Wiener, it is currently operating with a staff of 12—probably the largest research staff in the custom packaging field.

This staff oversees both the general quality of the product, and the specially-trained quality control personnel on the production line. It is Fluid's policy that there can never be too much quality control, and consequently every one of the five aerosol lines has quality control personnel scattered at key points throughout the length of the line.

The laboratory has facilities for cold and pressure filling test runs of a variety of product types, and is fully equipped with instruments and personnel to analyze and closely control the quality and performance of chemical raw materials, mechanical components, and finished products.

Aside from its huge central warehouse, (located in almost the geographical center of the plant) where materials are fed by lift-truck to the various production areas, Fluid treats its outside warehousing and shipping as separate operations. Prospect Storage & Warehouse Co., Inc., which operates the fleet of trucks that handles finished product shipments and maintains the propellant tank trucks owned by Fluid, is actually a subsidiary of the company. Two separate warehouses, also located within the area of the main plant, are also owned and operated by Prospect. In all these diverse operations, efficiency is paramount.

Top: Fluid is one of the few custom fillers in the world with its own propellant and bulk liquid tank trucks.

Bottom: Part of the company's fleet of trucks, which are used mainly to pick up raw materials and transport finished products to customers.

Philip Benedetti, (left) founder of Fluid, standing before the company's first plant in Newark in 1921.

In addition to its normal business activities, Fluid is highly active in association work, trade exhibitions, etc. The company will be the only custom filler with its own booth at the Packaging Exposition in New York in May, and will also participate in the Institute of Food Technologists Show in Chicago the same month. Key personnel from the company are active in the CSMA's product survey and publicity committees, and in the Society of Cosmetic Chemists.

This then, is Fluid Chemical. Banking heavily on its experience, prestige, and on increased productivity and improved packaging techniques, the management of the company expects to continue its leadership in the industry, no matter how fast it increases or how varied it may become!★

•

Barr Speaks in Philadelphia

Dr. Martin Barr, of the Philadelphia College of Pharmacy and Science, recently told a monthly meeting of the Philadelphia Hospital Pharmacist's Association that production of aerosol products in the hospital pharmacy is entirely feasible. Outlining the general principles of both cold and pressure filling, Dr. Barr declared that the conventionally trained hospital pharmacist could, with proper instruction, readily package aerosols.

He indicated that aerosolized bronchodilators, antibiotic-steroid combinations, and vasodilators are the primary field of importance for drugs put up in the pressurized package.

Conclusions of Medical Article, Warning of Hair Spray Dangers, Disputed by Industry Spokesmen

AEROSOL industry spokesmen appear generally to discount the conclusions of an article published in the March 6 issue of the *New England Journal of Medicine*, charging that aerosol hair sprays might contribute toward the formation of granuloma and other inflammatory reactions in the lungs. In a preliminary survey, which *Aerosol Age* has conducted over recent weeks among a sampling of aerosol researchers in filling companies, suppliers, etc., the overwhelming opinion seemed to be that the *Journal's* report was based on inconclusive evidence, that the test cases were not controlled closely enough to pinpoint the cause to a single contributing factor, and that animal experiments conducted to prove the initial "findings" were themselves inconclusive and misleading.

The authors of the article, Martin Bergmann, Jerome Flance, and Herman T. Blumenthal, all m.d.'s from St. Louis, charged that lung damage found in two young women at the St. Louis Jewish Hospital could be attributed to their use of hair sprays. To support their thesis, they cited a number of previous studies reporting on the hazards of parenteral administration of PVP, dextran, CMC, and other polymers commonly used in the formulation of hair sprays.

The main factor on which the findings of the article hinge appears to be the fact that both test subjects (one 27-year old and one 22-year old woman) registered suspicious respiratory symptoms only a short time after having been given a clean bill of health by previous examinations. From this and the visual evidence itself the St. Louis researchers conclude: "The radiographic appearance of the chests suggested that inhalation of a noxious agent might be the cause of the lesion."

Of the two test subjects, only one was subjected to any type of analytical study of organ damage. On this one (a 27-year old married woman) x-ray examination of the chest showed "bilateral hilar adenopathy and a diffuse reticular bilateral infiltration of the lung fields." A resection of the right scalene fat pad was done on Nov. 20, 1956, and three moderately firm lymph nodes, found in the specimen, were examined microscopically.

> "On microscopical examination the normal lymphoid tissue over most of the lymph nodes was replaced by nodular aggregates of large epithelioid cells. These were often present without giant cells, but occasional giant cells resembling those of the Langhans type were found. There was no necrosis, and only minimal numbers of polymorphonuclear or mononuclear leukocytes. Acid-fast stains and stains for fungi failed to demonstrate any micro-organisms. Fat stain showed no fat in the granulomatous portions of the nodes. Sections stained with the periodic acid-Schiff stain, thionine, and toluidine blue all showed metachromatic granules within epithelioid cells and free in the interstitial tissue. These granules were somewhat variable in size and spherical in shape.
>
> "After the fat-pad excision the patient was discharged from the hospital on Nov. 24 and was advised to discontinue the use of hair spray. Radiograms of the chest, taken on Jan. 9, 1957, showed a partial clearing of the infiltrate and the hilar adenopathy, and by March 9 the film was considered to be normal."

The second case, a 22-year old married woman, was studied because an x-ray examination had shown an "extensive bilateral reticulated infiltration of both lung fields and an enlargement of lymph nodes in both hilar areas." This subject reported using hair spray almost daily, and often twice daily, for about three years. Discontinued use of the material caused a "marked" regression of the infiltrate, and within four months of the original examination the chest was found to be "virtually normal."

THE St. Louis researchers admit that the exact nature of the particulate matter in the lesion could *not* be determined, but declare that "the only known inhalant to which the patient was exposed was hair spray." They point out that most of the resins used in hair sprays (with the exception of dextran) *cannot* be metabolized in the mammalian body because of their chemical inertness. "The larger particles (of these resins) are apparently phagocytized by the cells of the reticuloendothelial system and can be found in such cells in the liver, spleen, lung, bone marrow, and lymph nodes, as well as in other sites. In these locations the presence of resin incites an inflammatory or granulomatous reaction of variable severity."

They quote a previous source, Hueper, who reportedly demonstrated that polyvinyl pyrrolidone can "cause a variety of malignant neoplasms. The most common lesions were reticulum-cell sarcomas, lymphosarcomas, and related tumors. This is not surprising, since the reticuloendothelial system serves as the main storage site of these materials."

The main objections to the findings of the article within the industry appear to be on the incompleteness of the study (a typical comment is "It's *far* from a clinical study") the scarcity of controlled study cases to prove the claims, and the relatively few animal test cases that were documented.

Drug & Cosmetic Industry, for instance, makes the following comment:

> This article is based upon two clinical cases, in only one of which was it possible to examine the tissue microscopically, and on three guinea pigs who received injections. A large

(*Continued on Page* 109)

CSMA Announces Schedule for Cincinnati Meeting

View of the Netherland Hilton Hotel, site of the 45th mid-year meeting.

PRESSURIZED food products, insecticides, insect repellents, and chlorothene will highlight the technical sessions of the Aerosol Division of the Chemical Specialties Manufacturers Association, as its members convene in Cincinnati this month for the association's 45th mid-year meeting. Technical sessions begin on Monday afternoon, May 19 and go through Wednesday, May 21, all at the Netherland Hilton Hotel.

A major item of general interest on the program is expected to be the "Aerosol and Pressurized Products Survey," a report that is watched closely by related industries for aerosol product trends. As happened for all previous surveys, the 1957 product totals are expected to be substantially higher than the 1956 figures.

For its session on May 21, the Aerosol Division will meet jointly with its sister group, the Insecticide Division, and most of the papers will concern subjects of mutual interest to both divisions.★

W. Earl Graham
Chairman
CSMA Aerosol Division

MEETING SCHEDULE

TUESDAY AFTERNOON, MAY 20

AEROSOL DIVISION

"Address of Division Chairman," W. Earl Graham, Clayton Corp., St. Louis.

Report of Nominating Committee—Charles E. Beach, Stalfort Pressure-Pak Corp., Baltimore.

Election of Division Administrative Commission for 1959.

"Aerosol and Pressurized Products Survey" by Frederick G. Lodes, Lodes Aerosol Consultants, Inc.

"Complete First Year Program Report — Aerosol Publicity" by Norman O'Dell, G. M. Basford Co.

"The Use of Diethyl Toluamide Insect Repellent in Aerosols" by Henry F. Pierce, Hercules Powder Co., Naval Stores Department.

"The Use of Chlorothene in Personal Product Aerosols" by A. E. Schober, Dow Chemical Company.

"Economics of Retailing Aerosol Products" by Eugene Lesher, vice-president, Boyle-Midway, Inc.

"Microbiological Aspects of Pressurized Foods" by G. L. Hayes and D. W. Riester, American Can Co., Technical Service Division.

WEDNESDAY, MAY 21

Joint Session of Aerosol and Insecticide Divisions,
W. E. Baulieu and Alfred Weed, presiding.

"Instrumentation for the Aerosol Industry" by William B. Leighton, Union Carbide Chemicals Co.

"The Past, Present & Future of Labeling Pressurized Containers & Insecticides" by Robert E. Ackerly, Cummings, Sellers, Reeves, Conner and Kendall.

"Sprayers Can Help Your Insecticide Business" by Philip L. Hauser, Root-Lowell Manufacturing Co.

"Do People Read Labels of Household Insecticides?" by Arnold Mallis and W. C. Easterlin, Gulf Research & Development Co. (delivered by A. C. Miller).

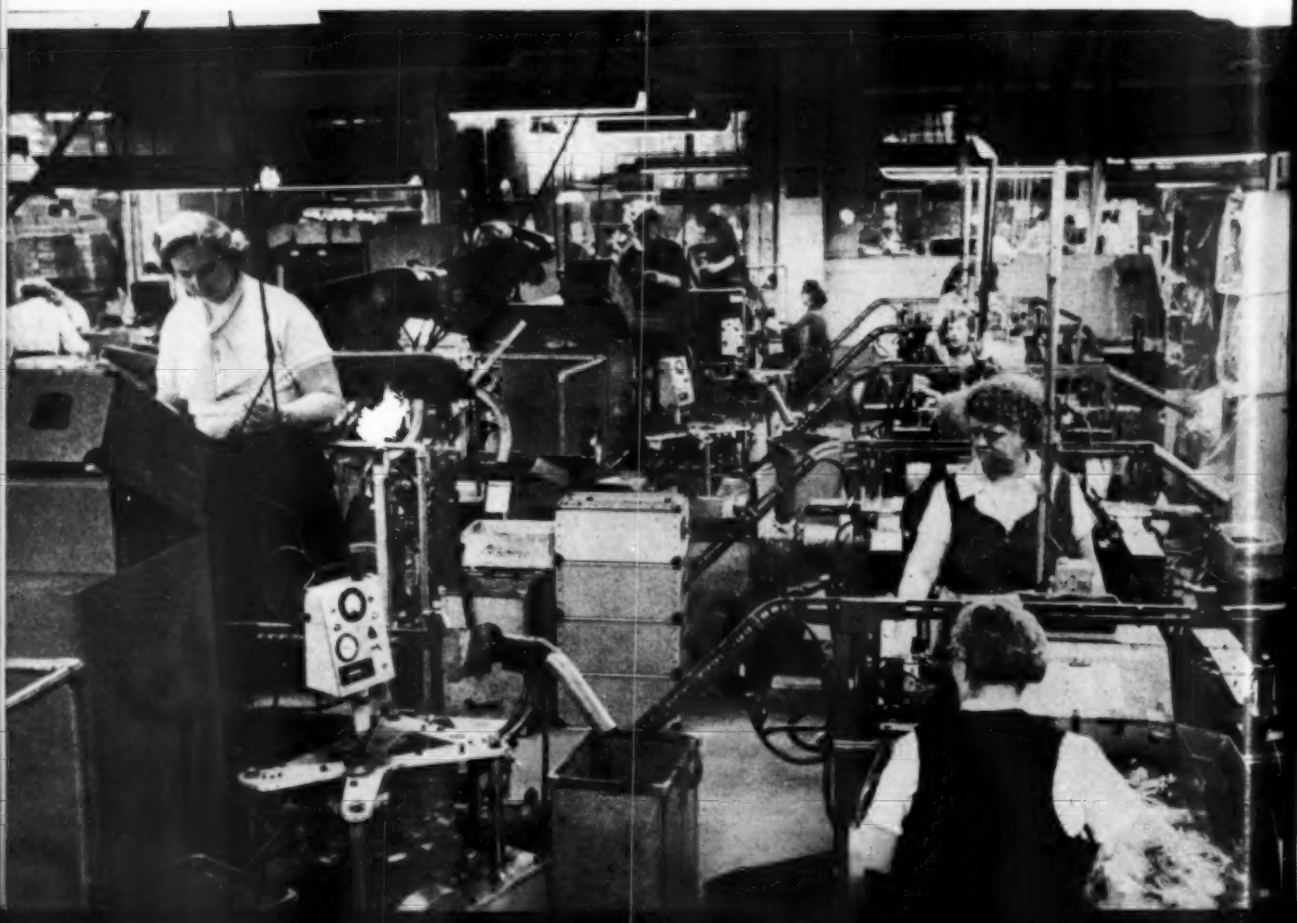
Precision Valve Corporation

The leading manufacturer of aerosol valves relies strongly on automation, quality control, and research to maintain its position in a rapidly changing industry.

IT was far from accidental that the leading manufacturer of aerosol valves sparked the most exciting and the most revolutionary development in the history of the aerosol industry. For it was Precision Valve Corp., Yonkers, N. Y., working closely with a number of alert contract fillers and merchandisers, that perfected the nitrogen pressurized package — to date the single development that gives evidence of opening up the pressurized package to a wider range of uses than any other development by the industry.

According to Robert H. Abplanalp, Precision Valve vice-president, even these estimates of the importance of this development are conservative. In his words, it is rather "The most significant development in the entire packaging field within the last 50 years! The nitrogen package will have a profound effect on nearly *every aspect* of the packaging industry. In fact, the word 'competitor' (as used in our industry) should no longer be

Precision's main assembly room, showing a battery of automatic assembly units.

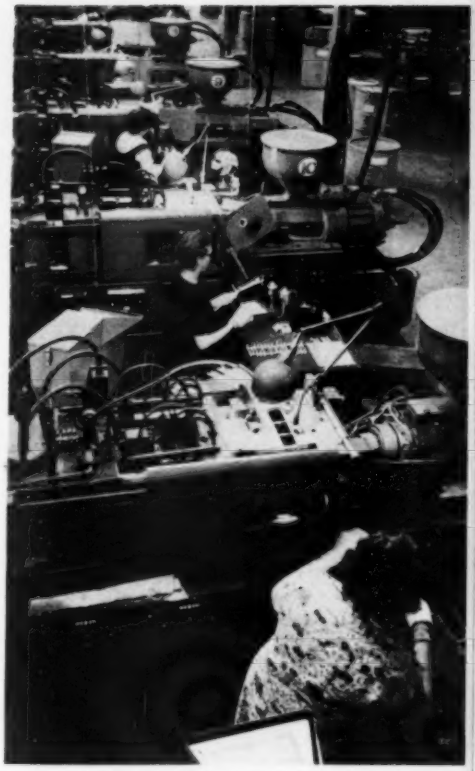


used as a term describing contemporary manufacturers in each branch, but rather should be a term used collectively by the industry to describe any form of packaging which does not employ the services and components required for pressure dispensing."

So impressive has been the first six months' developmental work on the nitrogen-powered aerosol that, by the end of 1958, Precision expects that the first major nitrogen product, toothpaste, will exceed all other leading product types in total unit sales. At this writing nearly every major toothpaste marketer has marketed a toothpaste in pressurized form (all of which are using Precision's nitrogen valve) and the impressive list includes at least several major firms which hadn't previously marketed a conventional dentrifice product. It is deemed to be a certainty by the Precision management that expansion of consumer acquaintance with compressed gas aerosols will correspondingly expand consumer knowledge and use of all types of aerosols.

In fact, Precision is so confident of the bright future of the nitrogen package that during the past few months the company has invested more than one quarter of a million dollars—in its nitrogen valve expansion alone. Most of this has gone into special manufacturing equipment for turning out the new valves, cover caps, and actuators. The company has shouldered the burden of additional investment in order to provide capacity at or beyond the market potential for the nitrogen aerosol.

However, with all this activity, nitrogen valves are by no means Precision Valve's chief product. The humming production lines at the Yonkers plant are currently turning out over one and a half million valves per day —the larger percentage of them conventional aerosol valves for sprays, foams, etcetera. Even in an industry as rich in Cinderella stories as is the



Precision's huge injection molding unit, one of the largest on the Eastern Seaboard.

An observer operator watches valves pouring from an assembly unit. Right: The quality control unit maintains control over all of the plant's output. This unit employs a wide range of instruments in its work.

An exterior view of the front of the Yonkers plant. The offices are in the right background.

aerosol industry, this production figure is almost incredible, when it is remembered that the company is less than nine years old!

PRECISION VALVE actually came into being through a major shortcoming of the industry. Back in the late 1940's, at the time of the early consumer success of the aerosol, many people in the industry failed to appreciate sufficiently the extreme importance of the valve. In those early years the suppliers of valves included some fillers and container manufacturers, many of whom were supplying valves only as an additional service to their customers. Malfunctions, incorrect or ineffective spray patterns, corrosion of vital parts, and other major and minor shortcomings were far from uncommon. Precision Valve was the first company devoted exclusively to manufacturing valves and able to concentrate the best talent available on the highly specialized problems encountered.

In the summer of 1949, two Westchester County men, John J. Baessler and Robert H. Abplanalp, came in contact with a number of these malfunctioning valves. At the time Mr. Baessler owned a small company that installed coin metering machines on automatic washers, and Mr. Abplanalp owned a small Bronx machine shop. Together they took apart a number of these early valves, examined them, and decided that (from their own mechanical training and experience), these valves could be greatly improved. After several months of work —designing, re-designing, building, tooling, they came up with a basic valve design that itself has had a profound effect on the entire industry, (and is the subject matter of an issued patent which has been described as a development of "pioneer" rank).

In the fall of that same year (1949) they incorporated the Precision Valve Corp. and began the production of aerosol valves in earnest. In 1950, Frederick G. Lodes entered the firm and from that time until he left it in 1956 it was operated on a one-third ownership basis. Mr. Lodes brought to the firm several years' experience with propellants (in the General Chemical Division of Allied Chemical & Dye Corp. and with Du-Pont) plus customer contacts throughout the industry.

In 1956 when Mr. Lodes left the firm to organize his own consulting company, (Lodes Aerosol Consultants, Inc.) Messrs. Abplanalp and Baessler acquired his interests (with the exception of the foreign rights, in which Mr. Lodes still maintains his interest).

In the present corporate set-up the key personnel include John J. Baessler, president; Robert H. Abplanalp, vice-president, Gordon C. Gilroy, sales manager; Angelo P. Ferrara, general manager; and Joseph C. Pizzurro, research director. Added to this administrative team is a large staff of technical, office and sales personnel, currently numbering slightly over 300.

ONE of the major factors contributing to its success is the fact that the company has never limited its market by affiliation with companies in any other branches of the industry, but rather has maintained itself in a position to render impartial and confidential service to all comers. Precision spokesmen point out that this policy has been, is now, and will be in effect as long as the company is a part of the aerosol industry. "The sole interest of the company is to make a substantial contribution to the growth and prosperity of the entire field by confining its effort exclusively to the manufacture of more and

The research laboratory is equipped to do test filling, shelf testing and all other important functions connected with turning out an efficient valve for a particular product or class of products.

better aerosol valves together with continuing research into better product applications," Mr. Abplanalp declares.

Precision is now operating seven production lines (all of them fully automatic) which in operation require only observer operators at several points to provide the control which is so important to the elimination of waste assemblies in high speed production (currently approaching 300 units per minute per line). The visitor to the plant would expect that the major share of personnel would be involved in the valve assembly operation. However, at Precision this isn't so, for there are many more people working in the other areas of the plant: injection molding, quality control, warehousing and shipping, dip tube manufacture, research, etc. This condition exists because of two special Precision policies:

1. An increased trend toward automation in the assembly plant, which both reduces the possibility of human error and frees personnel for more important assignments elsewhere in the operation.

2. Precision's firm reliance on quality control and research personnel to give its own valves distinction in a market where many of the valve types tend to be similar.

The company's special quality control laboratory is probably the largest of its kind in the industry. Through it, close supervision is maintained on each production line, and valves are taken periodically from each assembly unit and inspected by specially trained personnel. Each of these samples is checked (either through a microscope or through an electronic enlarger) against specially studied quality standards. This quality control laboratory is separate from the company's research laboratory, and is staffed by different personnel.

The visitor to the Precision plant is usually amazed by the size of the company's injection molding unit. There are currently 35 separate molding presses in operation, making this one of the largest injection molding units on the Eastern Seaboard. In this huge room are produced valve components, caps, actuators, etc.

The company's large machine shop is charged with building and maintaining Precision's large range of assembly units, injection molders, etc.

Part of the firm's design staff, important personnel in a company that turns out such a diversified valve line.

Adjacent to this injection molding unit are the automatic machinery, cooling tanks, etc., for making dip tubing. This unit, designed by Precision engineers, is probably also the biggest unit (from a volume standpoint) of its kind in the industry, for its current capacity is 140 miles of standard polyethylene tubing per day!

IN a company with the prestige of Precision Valve, customer service assumes tremendous importance. It is the research laboratory that is responsible, along with its research and development activities, for customer service. Since the company's customers range in size from the smallest packager to the largest contract or private label filler, the problems presented to Precision's research staff are staggering in both scope and variety. It is largely due to a tremendous concentration of effort in this direction within the company that an almost staggering number of patents has resulted, both issued and applied for on a wide variety of articles of inter-

Another view of the injection molding unit to show the battery of machines. Here actuators, caps, and other plastic molded parts are molded.

Test fillings of products using Precision valves are x-rayed in the laboratory to study valve performance, compatibility, etc.

est to the industry. At Precision, development work has always gone beyond the valves and better machinery to make them, on many occasions even going into the development of better machinery to package them, and better applications for merchandising them.

In a good many cases the customer will simply have a conventional product he wishes to put into an aerosol container. To avoid the use of an improper valve for a product, the research department asks that the customer submit a product sample for testing under controlled conditions. After a careful analytical study of the product's viscosity, acidity, corrosiveness, etc., a particular valve is selected and the product is test packaged. It is then tested for leaks, spray characteristics, weight loss, seepage in operation, etc., over a long period of time, and a special research log is kept for the customer's inspection.

In many cases the product in its conventional form may not be applicable to the aerosol container. Usually, Precision chemists are able to recommend slight formulation changes to insure proper functioning of the valve that is best suited to the product type.

It is these research and developmental activities of the department that are probably its most important —at least so far as the long range effects on the industry are concerned. The department is constantly studying new product types for packaging in pressure containers, new techniques in aerosol packaging, and ways of improving the overall pressure package.

The nitrogen development is a good case in point. Since the first announcement of success (made last October) the research group has taken a whole range of new product types under study. Currently close to the production stage are pressurized baby foods, liquors, chocolate sauces, shampoos, liquid detergents, and instant (or soluble) coffees.

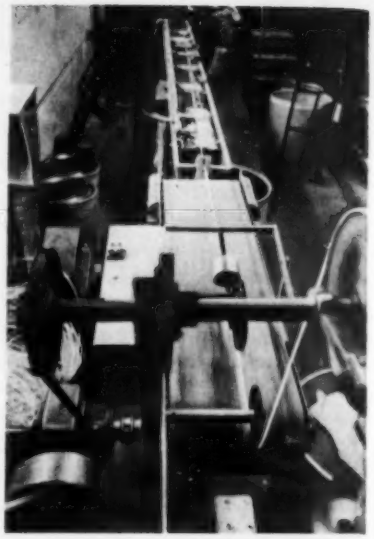
According to Mr. Abplanalp, each of these offers tremendous possibilities as the next big aerosol product: baby foods because they can be used in small quantities without either spoilage or necessity of refrigeration, liquor because the containers would be impossible to refill, and detergents and coffee because of the obvious convenience advantages.

One feature of the company that shouldn't be overlooked is its tremendous overseas business. Customers in Canada and Latin America are serviced directly from the Yonkers plant, but Precision has licensing arrangements with foreign manufacturing subsidiaries in France, Germany, Switzerland, Italy, Great Britain, and Japan. All these countries are serviced and licensed through Precision Valve International, Zurich, Switzerland, which is operated as a separate and independent company.

What about the future of Precision Valve?

As Mr. Abplanalp sees it, in the "not too distant future" the firm will be manufacturing several million valves per day. He thinks the new products under study in the company's research laboratory (added to the established aerosol best sellers like shaving creams, insecticides, hair sprays, etc.) will push the market far beyond the wildest guesses of a few years ago.

To take advantage of this steadily increasing market, Precision has numerous expansion plans. Manufacturing and shipping plants are being planned for other cities in the country, probably beginning with Chicago, Los Angeles, and possibly including Canada. Licensing arrangements are being negotiated with firms with access to the growing South American market, and possibly in Australia.



The polyethylene forming unit is probably the largest single such unit in the industry. Its content capacity is 140 miles per day.

At Precision Valve, there is little doubt that the aerosol market will continue to expand and that Precision Valve will expand along with it—striving toward continued improvement and development.★

•

New Babbitt Ad Campaign

The B. T. Babbitt Co., New York, last month announced launching of the biggest advertising campaign in its history to further stimulate sales of its already established product line. Developed by Babbitt's advertising agency, Brown and Butcher, Inc., the campaign will introduce a new concept in television spot advertising.

The lead-off spots will feature "BAB-O" cleanser, but others are now being produced for "Glim," "Airgene," and other Babbitt aerosol and nonaerosol products. In order to retain the full value of the commercial at the point of purchase, the announcement says Babbitt salesmen will be supplying dealers with merchandising aids.

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Handling of Pressurized Containers

By R. A. Fulton
Entomology Research Division, Agr. Res. Serv., U. S. D. A.
Beltsville, Md.

THE use of liquefied gases in aerosol-type packages makes a unique and effective way of dispensing many different products. However the pressure necessary for dispensing those products requires that certain precautions be observed in filling and handling them.

Liquefied gases have different characteristics than compressed gases. It is important to understand the properties of those materials with which we work and to know how they can be safely handled and used.

The importance of safe handling was impressed on me a few days after I started work on the liquefied-gas aerosols. A laboratory assistant was determining the pressure of the contents of a 1-pound, two-piece aerosol container that had been immersed in a glass constant-temperature water bath. The two sections of the container separated at the weld, and the upper half penetrated a four-inch concrete ceiling of the laboratory. The explosion shattered the water bath, and fragments of the glass were found imbedded in wood 30 feet away. Fortunately no one was hurt.

Three sources of pressure may be encountered in pressurized products — gas, vapor, or liquid. All three can be dangerous as the temperature within the container increases.

Gas pressure is well illustrated in the cylinder of an air pump. The more air you pump into the cylinder the higher is the pressure. The air remains a gas, and if the temperature rises, the pressure does not build up rapidly.

Every liquid has a vapor pressure, and when this is equal to the atmospheric pressure, the liquid will boil. The liquefied-gas propellants used in aerosols vary in boiling point from —30°F. or below to room temperature or above. The vapor pressure of a liquid increases much faster than the pressure of a compressed gas when the temperature increases. If a liquid is confined in a closed container and heated, the vapor pressure will increase until the liquid has reached the same temperature as the heating source. If the liquid is heated above its critical temperature (the temperature above which the substance cannot exist as a liquid, no matter what the pressure may be), it will turn to vapor and will exert pressure beyond the limits of most containers.

LIQUID pressure is the most hazardous of all. Liquids are not compressible, and they expand on heating; therefore, if a rigid container is full of liquid, it will burst from a slight increase in temperature. Several serious accidents have been caused by heating cylinders to transfer the liquid contents when the liquid failed to pass through the valve. Many accidents have been caused by filling small receivers chilled in dry ice without weighing the liquid contents or allowing for expansion of the liquid when it returns to room temperature. Figure 1 shows what happened when an error in weight resulted in the rupture of such a cylinder. Fortunately, no one was in the laboratory at the time of the explosion.

FIGURE 1.
An oxygen cylinder that filled with cold liquid and ruptured while warming to room temperature.

When aerosol containers are heated, great care must be taken, as they are not made to withstand much pressure. Liquefied-gas shipping cylinders have fusible plugs that melt when the temperature reaches a certain point, but aerosol cans do not have such safety devices. It is therefore necessary to use controlled temperature devices when they are heated above room temperature. The potential energy from the sudden release of liquefied gases is more hazardous than from compressed gases, because the liquid evaporates and forms gas that will give more propelling force.

Liquefied gases have been handled commercially and in laboratories for many years. The safety record is good, but it does not tell the number of accidents that occurred before safe practices were developed.

Since in the laboratory most aerosols are tested in glass bottles or pressure tubes, protection must be provided when these units are being handled. Before the low-pressure aerosol came into common use, we devised a method for determining the

propellant - 12 - insoluble portion of pyrethrum extract. All types of pressure bottles and heavy-walled test tubes were tried to develop a safe testing unit and to prevent injury in case of an explosion. It was necessary to use a container of approximately 300-gram capacity, and the type of bottle that has been used for years for citrate of magnesia was found to meet our requirements. The production of the citrate of magnesia bottle has been discontinued by most manufacturers, but it is still being made by the W. B. Preiser Co. of Charleston, West Virginia. A frame was devised to hold a valve on top of the bottle. It was necessary to use a single ball bearing as a pressure point to equalize the strain on the bottle and hold the valve tight. A safety shield made of heavy, large plastic tubing was placed over the bottle to reduce the hazard from flying glass in case of explosion. Safety-glass shields were used in front and back of the bottle filled with liquefied gas. The shield in back was used to protect other workers from flying fragments.

Figure 2 shows one of these shields, made from two sheets of ¼-inch safety glass, separated with a ⅛-inch rubber gasket; which forms an air cushion between the two layers of glass. This arrangement will stop heavy fragments. The fracture in the glass in the center of the shield was caused by an exploding bottle. The shield shown was tested by firing an Army .45 pistol at a distance of 10 feet. Not until the glass was shattered by several shots did the bullet travel more than six inches after passing through the glass.

FIGURE 2.
A heavy-duty glass shield made of two pieces of ¼-inch safety glass separated with a ⅛-inch gasket. Note fracture on inside glass caused by an exploding bottle in a metal holder.

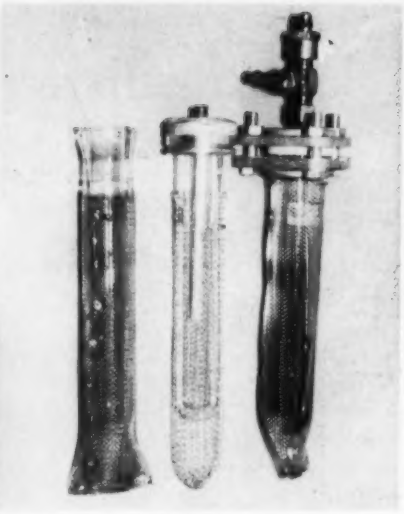


FIGURE 3.
Pressure test tubes covered with bronze screen (flank) and stainless steel screen; spot soldering at seams visible on left hand tube.

Citrate of magnesia bottles are durable, but we have found that they become fragile after the surface becomes scratched. The bottoms of the bottles become scratched in normal laboratory usage, and the bottles should be discarded when the glaze has been destroyed. The beverage industry uses ultraviolet and polarized light to detect flaws in glass, but if a bottle is first tested under pressure and continuously watched for scratches, there is little chance of glass failure when normal handling precautions are taken.

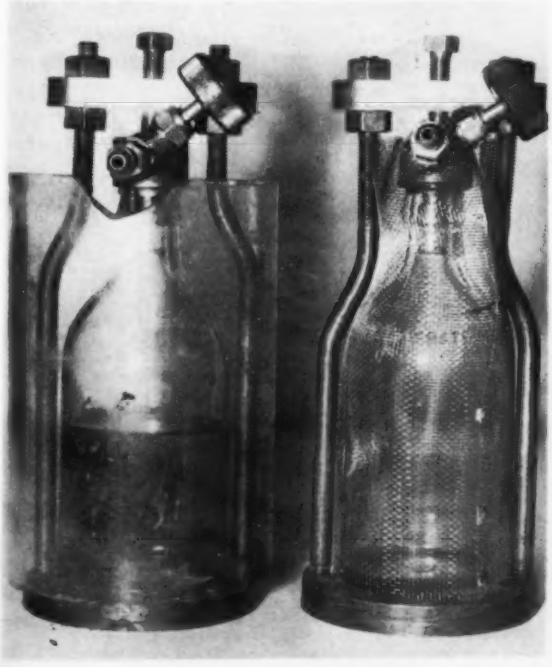
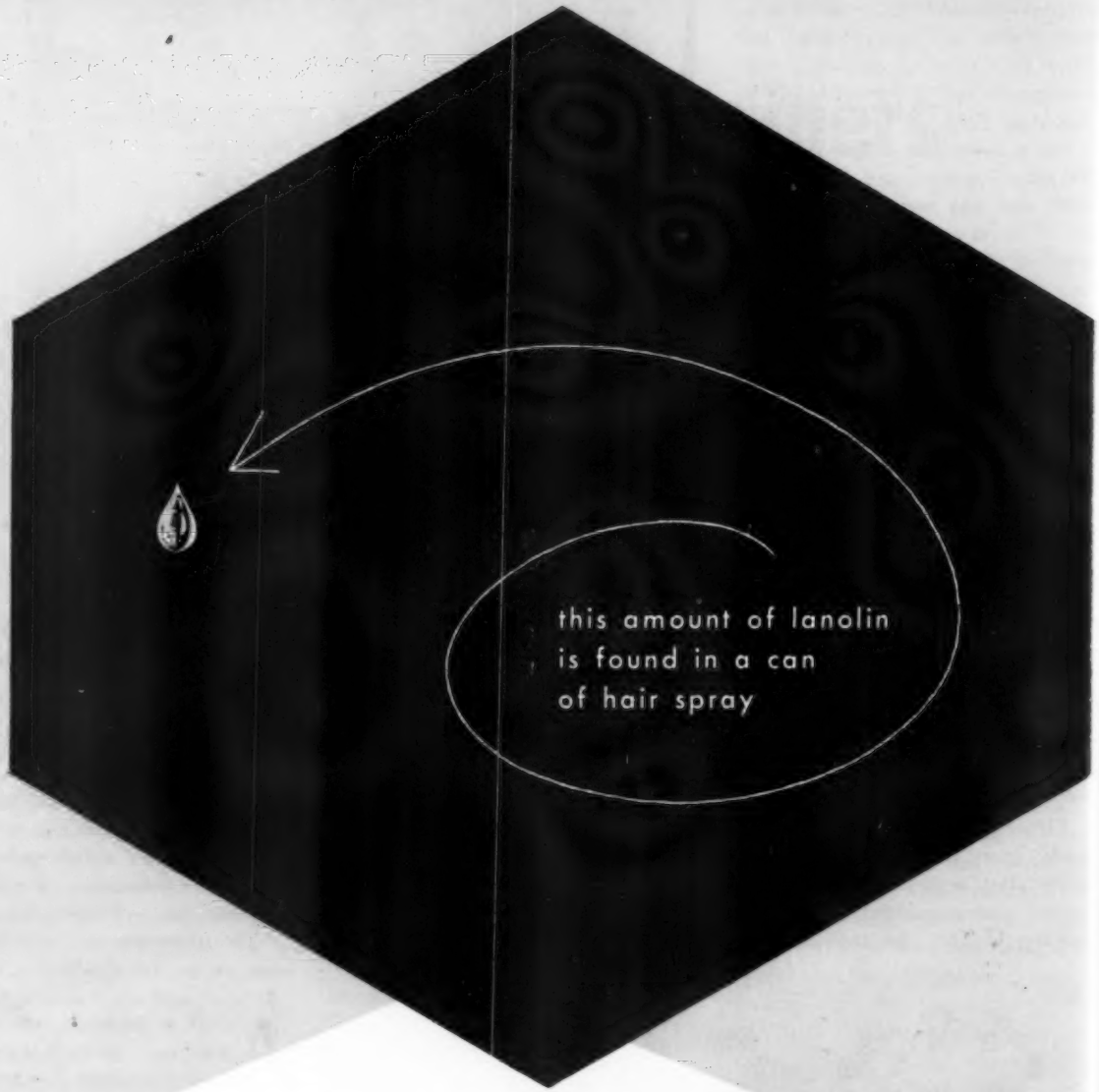


FIGURE 4., "A" is at left.
Pressure-bottle protective shields. Left: plastic (not satisfactory); Right: wire screen with spot-soldered lap.

WHEN a pressure failure of a glass unit occurs, it is impractical to confine the gases. The protective unit must therefore be designed to filter out the fragments and allow the gas to escape. For several years we used the plastic shield shown in Figure 4, *A*, but in time the plastic becomes brittle and will shatter when the bottle fails under pressure. The wire-screen arrangement shown in *B* has been found more satisfactory. The screen should be fitted loosely to the glass container to stop the glass fragments and allow the gas to escape. Ordinary bronze fly screen was found to be the most practical for making the protective units for pressures up to 300 psi. Screen for higher pressures should be of stainless steel. The screen should be spot-soldered at the lap (Figures 3 and 4). Ordinary



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plumber's solder (50-50) is satisfactory for pressures up to 100 psi, but silver solder should be used for higher pressures. Stapling the lap is not satisfactory.

FIGURE 5.
Pressure test tube in holder made by cutting slits in a brass tube.

For a number of years we have used casings made of brass to hold pressure test tubes (Figure 5). Slots were made in the casing so that the liquid could be observed. When the tubes were broken with a pointed file, the glass fragments passed through the slots with a force that ruptured all wire-screen coverings. Safety eyeglasses made from a light-gage plastic were penetrated when placed three feet from the explosion, but those made from tempered glass were not affected.

It is important to wear gloves of the right type when handling glass containers under pressure. Pigskin, leather, cotton, leather-faced cotton, and leather work gloves were tried. Glass was found to penetrate all except the common soft-leather work glove with cuffs. The gloves should be loose-fitting; tight gloves will allow the fragments to penetrate the leather. Loose clothing should also be worn for the same reason. Heavy, loose-fitting gloves should always be worn while filling or breaking connections or handling cold liquid to prevent "frostbite."

Flat-surface safety goggles made

(*Continued on Page* 103)

Pennsalt Evaluates New Particle Analysis Instrument

By DAVID S. TILLOTSON
Isotron Technical Service
Pennsalt Chemical Co.
Philadelphia, Pa.

THE Isotron Aerosol Laboratory of Pennsalt Chemicals Corp. has evaluated a new instrument for the size analysis of solid and liquid aerosol particles.

The instrument was developed by the Oxford Research Group of the University of Pennsylvania under the direction of Dr. John McGinn and John MacWaters, who have been active in university research programs in this field for several years. The instrument appears to offer novel solutions to long-standing problems in the aerosol field.

The particle size range of the instrument is from 10 to 75 microns. However, with modification the range of analysis may be extended to include particles from five microns diameter up to several hundred microns diameter. This range can be covered with a single setting of the instrument, and in addition, means of obtaining particle size distribution as a function of time can be provided.

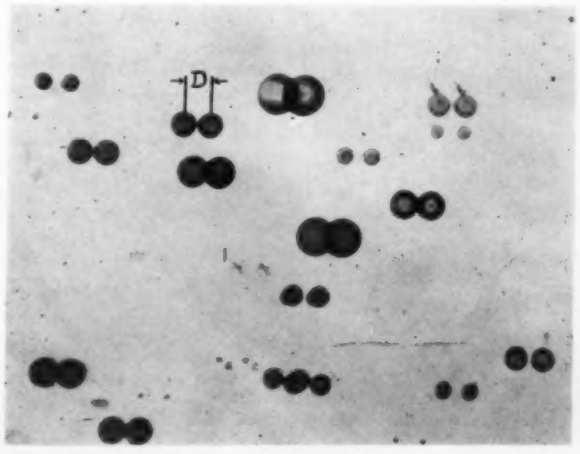
The instrument, operating on inertial principles, achieves a partial separation of the particles according to size, particles of different size fractions are collected at different positions in the instrument. Size distribution of the particle samples by the instrument can be obtained by a microscopic count of the particles at each position, or by a determination of the mass of these particles by chemical or colorimetric techniques. The instrument can also be adapted to produce a completely automatic size distribution in a matter of minutes by utilizing "scattered light" techniques and electronic counters.

The operating conditions of the instrument can be adjusted over a wide range. This means that isokinetic sampling can be achieved by adjusting the sampling velocity to match the aerosol discharge velocity, thus avoiding bias in the sampling process.

The principle of operation is such that there is no shattering of liquid droplets and no "wall losses," which are a troublesome feature of many instruments.

Some idea of the ability of the instrument to separate aerosol parti-

(*Continued on Page* 103)



Proportional Measurement of particle size range can be done by comparing instrument setting and microscope field width.

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German Aerosol Meeting Held; European Association Plans Deferred Until Later in '58

By Dr. Tom C. Clark

THE Frankfurt Group held its second organization meeting in Frankfurt on April 15 with over 90 in attendance representing over 65 individual companies in nine European countries. The meeting was held in a large conference room at the Frankfurt Zoo, which, unlike most such establishments, is located practically in the city's center. Called for 10 A.M., the meeting got under way with reasonable promptness and (with a luncheon break in the same building) lasted until well into the afternoon. With the program the delegates had laid out for themselves and the divergent views to be reconciled, all the time was needed.

Hans Hentzel, editor of *Parfümerie und Kosmetik*, a leading European cosmetic trade journal, opened the meeting with a short review on the founding of the Frankfurt Group and its activities up to the date of the meeting. He recalled they were the first with concrete proposals for the formation of a European aerosol industry association, and was glad to see it realized on this basis (with representatives present from nine separate European countries). He observed that, together with the Zurich Group (the International Aerosol Association) they welcomed attendance and membership from similar other nationally organized groups and he announced the formation of a new French Group (on which more is given below). He also called attention to the first issue of the Frankfurt Group's aerosol news bulletin, copies of which were distributed before the meeting. At the conclusion of his introductory remarks, Mr. Hentzel introduced Friedrich H. Hans, Frankfurt representative of Pegasus International Corp., of New York, who in the interim had acted as group secretary, and who presided for the remainder of the meeting.

Mr. Hans quickly got down to the meeting's serious business and stayed close to the previously published agenda throughout. Regarding the membership of the Frankfurt Group, he emphasized the number of European countries represented and made special mention of the number of private loaders—end product producers in the cosmetic field—who had shown their interest by attending. With respect to the Zurich and other rival or parallel groups, he observed that all were "European" in character and no one any more "International" than the other. He spoke of all the movements under way to "Europeanize" Europe, mentioning the Coal and Steel Community, the recently effective Treaty for the European Common Market, Euratom, and the European Atomic Energy Commission. However, he pointed out they were all some years from complete realization and that in the meantime it might be better to try to build small bridges from country-to-country, or section-to-section (Benelux, Scandinavia, etc.) than to try to put up a complete roof over the whole of Continental Europe at one fell swoop.

Based on these reasons, he explained that the Frankfurt Group had decided *not* to participate on the IAA's board of directors, or committees with a representative as such from the Frankfurt Group. Such cross-section or inter-locking representation, the Frankfurt Group had decided, should be left to the individuals or the companies involved, and would not be a policy of their association. The different aspects of this problem were aired at a later point in the meeting and we come back to them below. After explaining the Frankfurt Group's activities would be concentrated in three fields —technical, consumer end products, and publicity—Mr. Hans then directed the meeting's attention to the elections and the following were confirmed on the board of directors:

Director Staehle, J. G. Mouson and Co., Frankfurt/M.
Johannes Saphir, Kadus Werk, Lenzkirch/Schwarzwald.
Eberhard Obrocki, Haarmann and Reimer, Holtzminden.
Prof. Dr. L. W. Hasse, Berlin.
Dr. Kurt Jacobi, J. A. Schmalbach Blechwarenfabrik, Braunschweig.
Hans Hentzel, Editor, *Parfümerie und Kosmetik*, Frankfurt/M.
Director Hans Schloss, Propan-Schabert Co., Munich.
Dr. Werner Hoffman, Precision Valve International Corp., Frankfurt/M.
Eduard Bruun, Nivea, Copenhagen.

UNDER the agenda the board had been empowered to elect the permanent officers from among their own members, also to appoint an executive committee, the office director, and a variety of other matters including the new association's policy toward the other rival or parallel European aerosol organizations. It was subsequently decided that the first board meeting would take place on June 8, in the meantime all such definitive action being left in status quo.

Thereafter, the "working committee" which had been set up at the first meeting was confirmed intact. It consists of the following members:

Georg Buchholz, Braunschweigische Blechwarenfabrik G.mb.H. Braunschweig.
Director Ernst Kohl, Vereingte Deutsche Metalwerke, A.G. Nürmberg.
H. Seibel, Glasswerke Ruhr, Essen-Karnap.
W. G. Delmore, Precision Valve International Corp., Zurich, Switzerland.
Mr. Reulecke, Cela, Landwirtschaftliche Chemikaliengesellschaft, Ingelheim.

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Ing. Karl Bergwein, Dragoco-Gerberding and Co., Holzminden.

Director Staehle, J. G. Mouson and Co., Frankfurt/M.

Dr. Egon Honisch, Aeratom AG. Rapperswil, Switzerland.

Emil Hirschburger, Aerosol Service AG, Basel-Riehen, Switzerland.

There was to have been a representative of Farbewerke Hoechst AG, Frankfurt/M-Hoechst on this "working committee," but as their representatives attended neither the Zurich nor the second Frankfurt meetings and Mr. Hans explained he had no further word from them, the position has been left open. The future function of this "working committee" was not disclosed, but as no other committees (technical or publicity) were proposed, it is assumed it will act essentially as a Technical Committee. This working committee is to meet with the board on June 8.

With the formal end of the meeting's business over before lunch, some controversial subjects relating to the parallel groups in other countries, scope of membership for the Frankfurt Group, over-lapping and duplicate coverage and activities, etc., came up for serious discussion. The first to broach the problem was Dr. Wolfgang Benzinger, Gesamtverband Feinolechverpackung, Düsseldorf, who pointed out that difficulties could not be solved by ignoring them and it appeared to him the matter should have a complete airing.

Dr. Herbert Meuresch of Boehringer Sons, Ingelheim/Rhein urged what practically amounted to a dissolution of the Frankfurt Group and the recognition, by those assembled, of the Zurich Group as the only truly international or European group which could effectively and best represent their interests. Later Mr. Hirschberger, one of the founders of the IAA expressed the same ideas, pointing out the over-lapping, duplication, not to mention the cost burdens involved in such a variety and number of groups all doing substantially the same thing.

Director Schloss then said that a real objectivity on the problem by those who had spoken was scarcely possible and urged quieter and more considerate study. Messrs. Hentzel and Hans both attacked the views of the others, claiming their interests and activities ran parallel with and not counter to those of the other groups.

At the end of the meeting it was suggested that a committee of two from the board should meet with a similar small committee made up of two members from the Boards of the Zurich and French Associations for the purpose of exploring the possibility of coming up with one single European Aerosol Association, representative of all segments of the in-

(*Continued on Page* 106)

Victor Produces First Aluminum Containers

THE first aluminum cans to be produced in the U. S. at prices lower than steel containers started coming off the production line here late last month.

United States Can Corp., Newport, Ark., newly-organized subsidiary of Victor Metal Products Corp., officially opened its new $2 million, 32,000-square-foot aluminum can making plant with an open house tour. On display was its first product, a one-piece, seamless six-ounce rigid aerosol can of lightweight aluminum with 14/1000-inch wall thickness. Initial runs were scheduled to meet orders from several large soap, toiletry, and food firms.

Victor Muscat, president of United States Can (as well as of the parent company), announced that the company is quoting $45 per thousand on the six-ounce "Victor" aluminum aerosol container (for quantities of 2 million or more), and $50 per thousand for lesser quantities. Similar "tin" cans currently are priced at about 2.3% higher, he said.

"This low price," said Mr. Muscat, refutes the claim that a competitively-priced aluminum can was impossible to achieve at this time."

He attributed the company's ability to produce aluminum cans at these low prices to long experience in developing an efficient and automatic manufacturing process and to the further development of a cheaper method of fabricating from aluminum the basic material for making the cans.

Another companion company, Aluminum & Chemical Corp., also of Newport, supplies United States Can with aluminum slugs—the basic material. Thus, Mr. Muscat points out, the can maker is able to satisfy its raw material requirements at a price nearly 25% less than if it had to purchase from primary suppliers.

The impact-extrusion technique used to make the cans is somewhat similar to that used by Victor Metal Products in annually producing more than 200 million collapsible metal tubes. The company already has in operation one producing line, and expects to complete installation of a second early in August. By the end of this year it expects to be producing at an annual rate of 50 million cans, with each line turning out 100,000 units a day.

According to Mr. Muscat, three more producing lines will be added in the future and bring annual output at the United States Can facility to 125 million cans a year. And the company has plans on the drawing board for new facilities to bring its production up to one billion annually.

Mr. Muscat predicted that by 1968, aluminum more than likely will have captured a 10% share of a total can market estimated at 55 billion. This would indicate usage of some 450 million pounds of aluminum a year in rigid cans, more than 10% of present annual consumption of the metal, he declared.

"The dynamic and fast-growing 500 million can a year aerosol field was first selected for promoting aluminum because of its quick adaptability to change and because the physical advantages of aluminum are even more pronounced in aerosols than in normal cans," explained the metals fabricator. Aluminum aerosols are seamless and hence virtually leakproof to interior pressures, whereas steel cans do have leakage problems.

The Stainless Steel Aerosol Container

By Philip Meshberg
President
Emson Research, Inc.

Fig. 1—The Stainless Steel Container.

STRANGELY enough, the present stainless steel bottle, which is currently opening up an untapped market for pharmaceutical and cosmetic aerosols was first designed to be made from aluminum. A few years ago, when the first metered valve was introduced by Emson Research on a small glass coated bottle, it became obvious there was a need for a small metal container—one of purse size for personal use.

The problem was to develop a sturdy, one-piece, lightweight container made so that it could be easily fabricated and to which a valve could be sealed. A straight sided shell was made with a radius flange on the open end together with a groove or a neck approximately one-eight of an inch below the top—about 1/32 of an inch deep. A satisfactory seal was made with a valve mounted in an aluminum ferrule utilizing a soft rubber gasket.

As more pharmaceutical and cosmetic chemists became interested in aerosol formulations, the problem of corrosion, product compatibility, and strength of the container all loomed as serious drawbacks. The opportunity to overcome this problem came in early 1956. A well-known drug firm was about to market the first ethical drug for asthma—utilizing the metered valve. Emson Research, Inc. offered to supply a stainless steel bottle to replace the glass-coated bottle then in use. Since a stainless steel bottle for this particular purpose had never been made before, the purchase order was given on a contingent basis—the unknown factor being whether the same bottle (which had been made successfully of aluminum) could be fabricated from stainless steel.

First efforts were concentrated on fabricating the bottle satisfactorily from a production standpoint, and also with a view toward permitting satisfactory crimping of the valve. This initial production determined the limitation of stainless steel in fabricating the bottle, and enabled Emson Research, to finalize the dimensions and specifications.

Stainless steel is by far one of the most difficult metals to use in making a deep drawn container. Special carbide tools and coolants are required —not to mention the tedious trial and error method of working out the precise dimensions of the tooling so necessary when working with stainless steel in order to assure continuous trouble-free production.

At this writing, it is estimated well over a million stainless bottles (the same type as those developed by Emson Research, Inc.) have been used by this one drug firm alone.

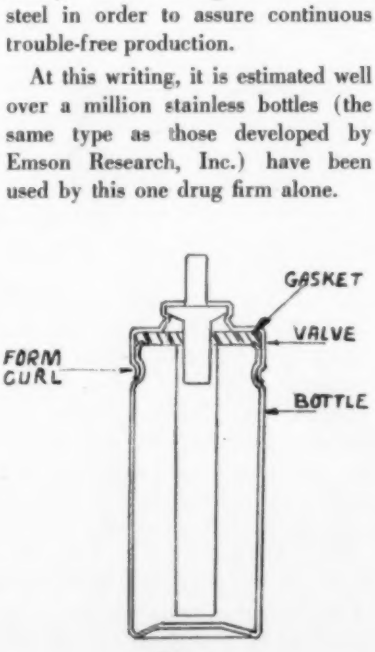

FIG. 2

The stainless steel "bottle" — as small bottles go—(see Figure 1) is ideal for the filling operation. It can be handled in bulk without any fear of marring or denting. The bottles are consistent and accurate in size, thus eliminating any problems of fitting them into "pucs" or adapters (which are commonly used for automatic feeding on the aerosol filling line). They are strong enough to withstand all the crimping pressure necessary to make a satisfactory seal. The valve can be attached either by the crimping method (utilizing a split collet) or the conventional rolling method used for glass bottles.

Figure 2 illustrates the manner in which the valve is usually assembled to the stainless steel bottle.

Despite the fact that the bottle is fabricated from thin gauge metal (.010 thick), it is exceptionally strong. This strength is due to work hardening—which results from the number of operations necessary to fabricate the finished bottle from flat sheet. For this reason (and also because of the special design of the sealing rim) it is possible to attach the valve *without* using the rubber gasket. In its place polyethylene or nylon material can be used. The elimination of the exposed rubber in the gasket is desired for many pharmaceutical products.

The stainless steel bottles presently manufactured by Emson Research come in two sizes and four styles. The latest style is a 10cc. bottle designed primarily for use as a refill cartridge for attractive outer cases. The larger unit (13-½cc volume), utilizing the

(*Continued on Page* 109)

Nitrogen Propellant*

By W. G. Delmore
Vice-President
Precision Valve International
Zurich, Switzerland

WHENEVER compressed gases have been considered for aerosol products, the main effort has generally been concentrated on the use of nitrogen. For some time the industry has been seeking a method of introducing aerosol food and pharmaceutical products to the public. However, because of toxicity, cost, and aesthetic problems, liquefied gases were not always satisfactory for this medium. In an effort to assist the aerosol industry in the development of food and pharmaceutical products, Precision Valve Corp., together with other leading U. S. custom packagers, worked together to devise a system suitable for products which could be adapted to the compressed gas medium.

Currently, most of the leading dentrifice manufacturers in the U. S. are marketing aerosol toothpastes on a nation-wide basis, and many of the large firms in the beverage, condiment, and pharmaceutical fields are also conducting market tests. The use of compressed gases may soon increase the total aerosol volume in the U. S. by at least 100%, with real prospects that the total volume of compressed gas aerosols within the next two years may well exceed 200 million units. Most of the companies currently preparing their products for this new medium are well known and have established markets, and it is their unanimous opinion that the use of compressed gas propellants for aerosols represents a *revolutionary* new advance in packaging methods.

The compressed gas system is simplicity itself. The nitrogen is contained in the head space of a can, and since it is not soluble in the liquid concentrate, it always remains in a gaseous state. The nitrogen used is of the "oil treated" (sometimes called "oil-pumped") type, and has been approved for use with foods by the U. S. Food and Drug Administration.

The filling proportions are 60 to 66% concentrate by volume, the remainder being compressed gas introduced into the container at approximately 90 p.s.i.g. As is well known, nitrogen is an ideal gas as to conformance with Boyle's Law. Therefore the unit will lose some of its pressure as the liquid concentrate is evacuated from the container and is replaced by the nitrogen over this larger volume.

With a 60% fill of concentrate, gas pressure will drop at the point of exhaustion to approximately 30 to 35 p.s.i.g. or about two atmospheres at room temperature. Also, as a sort of "rule of thumb", it may be said that nitrogen, when filled at about 90 p.s.i.g. at 70°F., will increase in pressure approximately one p.s.i.g. for every 5° increase in temperature — the relationship being a straight line (as opposed to the graphic drawing of the fluorinated hydrocarbon propellant, which is a curve). However, the pressure at the point of exhaustion has been found to be quite satisfactory for ejecting the concentrate, although the rate of ejection is naturally somewhat slowed down.

IN VIEW of the fact that the nitrogen medium is used only to eject the concentrate with sufficient force to make it flow freely from the spout, the lower pressure as the unit is being exhausted will suffice for most products involved. Since nitrogen is not soluble in the liquid concentrate, there is no chance of a foaming action. Also, since it is not an active gas, many of the difficulties heretofore experienced in aerosols (such as corrosion, oxidation, rancidity, etc.) have been eliminated — provided the liquid concentrate is itself stable, and provided that there is no chemical or physical reaction between the liquid concentrate and the container or container coating.

As has been previously stated, the normal pressure for filling is 90 p.s.i.g. at 70°F. or 21°C. At 130°F., (the temperature at which the filled unit is tested in accordance with Interstate Commerce Commission regulations) the pressure is approximately 102 p.s.i.g., which is below the pressure developed by certain fluorinated propellants at the same temperature. By the same token a reduction in temperature is not substantially material to the flow rate, since, here again, the pressure is not greatly reduced by the lowering of the temperature(as is the case with many other propellant gases currently in use).

Weight loss is an important consideration, and there has been con-

* Presented before the meeting of the International Aerosol Association, at Zurich on March 18.

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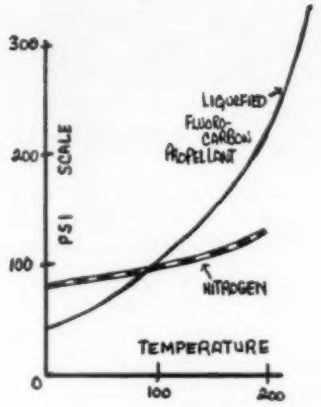
siderable discussion in the industry about containers "breathing" or losing weight. To a large degree this has been found to be due to the fluorinated hydrocarbon propellants passing through the gasketing material (by osmotic reaction) and thus escaping. This gas escape can be accelerated through use of methylene chloride, vinyl chloride, and certain other aromatic and/or aliphatic solvents which have a greater ability to permeate gasketing material. Nitrogen, on the other hand, has little solvency, and apparently no physical reaction upon gasketing materials. Consequently, it has been found that over a period of 18 months, the weight loss (if any) is so small that it is not measurable.

WITH respect to containers for nitrogen products, detailed, long-term tests have been conducted on all sizes and with all protective coatings presently on the U. S. market. From both technical and physical standpoints, the containers tested have been found to be satisfactory.

Naturally, container manufacturers have had to design their cans so that they will withstand the internal pressure exerted on them in the 130°F. heat testing, and even in the process of autoclaving certain foods. This autoclaving is done at a temperature of 200°F. for 15 minutes. A so-called "2 P" bottom is required for these particular containers.

As to coatings, preliminary tests have shown that a vinyl coating appears satisfactory for food and beverage products. For toothpastes, shampoos, and certain other alkaline products, tests have shown that the Epon coatings are satisfactory. With regard to glass, due to the physical and chemical characteristics of nitrogen itself, a higher degree of loss danger with regard to injury as a result of bursting of the pressurized bottles should be anticipated as compared with current propellants.

Some modification of standard valves is required to make them adaptable to the compressed gas medium, so that they function properly. To a large extent these modifications depend upon the viscosity of the liquid concentrate and the flow rate desired, e.g., in the packaging of toothpaste, the stem is so constructed as to allow for not only an extremely rapid input of gas during the filling operation, but also (and this in spite of the viscous nature of the toothpaste concentrate) the valve's inside diameter has been modified to allow a more rapid discharge of the viscous concentrate. Also, the inside diameter of the eductor tube has been increased and it is of slightly different design, to allow for rapid product expulsion. The dispensing spout of the valve is similar to some shaving cream heads (at least in outside appearance) but it is bent at the end and several modifications have been made to the internal structure. Also, the valve housing has been modified. However, the mounting cup is standard in design, but should be coated — depending upon the product that is to be dispensed. There has also been a change in the gasketing material in order to facilitate trouble free operation.



Pressure-Temperature relationship chart.

WITH regard to toothpaste, one additional development has been made. While it has been found that there is no problem of bubbling or entrapment of gas bubbles in the liquid concentrate (providing the concentrate is allowed to settle for a few minutes after it has been filled or shaken) as the liquid concentrate nears the complete exhaustion point a certain amount of cavitation develops directly above the mouth of the dip-tube. This condition has been corrected by giving the dip-tube a pre-determined fixed position, and by attaching a special flanged device at the end of the tube. This special device requires the liquid concentrate to enter the dip-tube from a much wider diameter opening, so that the pull in any one area of the can is lessened considerably. This brings cavitation to an absolute minimum.

Although as yet no definite valve specifications have been set up for the various new food products under study, the manufacturers of these various concentrates generally specify the best combination to be used after careful experimentation in their own laboratories.

To a large extent the use of nitrogen in aerosols reduces the complexity of the filling operation which prevails for pressure filling of fluorinated hydrocarbon propellants. Also, since these conventional propellants have to be filled in a liquid state, complicated refrigeration and/or pressure filling equipment is required.

For the small operation of 2000 or 3000 per day, it is only necessary that a large pressure tank be filled with nitrogen; and that a tube leading to the filling equipment be equipped with a pressure regulating valve to control the flow at 90 p.s.i.g. A set of standard oxygen double pressure regulating gauges will suffice. The tube is merely attached to the top of the aerosol valve so that it is depressed and the pressure within the container equalizes itself with the pressure in the filling tube (90 p.s.i.g.). The adapter for these various valves is of relatively simple construction and can be made from standard fittings. What this means is that a major fill of propellant, under a prescribed set of complex conditions, is no longer necessary. Also, nitrogen equipment will facilitate multiple spout filling.

For the filling of certain food and beverage products, it is necessary to pasteurize the units after filling. For instance, with coffee and chocolate it has been found that subjecting the finished unit to a temperature of 200°F. for 15 minutes will either

eliminate the formation of mold and/or bacteria or minimize it beyond the danger point. It is also necessary to evacuate the air from the can before the introduction of nitrogen by submitting it to a vacuum condition of 28". This evacuation step is performed after filling the concentrate and is done simply by inverting the closed container and fitting a vacuum pump onto the aerosol valve. I mention the specification 28" as an extra safety precaution, because actually only 23" is specified and required by the U. S. FDA.

The cost of nitrogen filling is one of the most interesting features of the entire development. The amount of nitrogen used per six-ounce aerosol (on about a one-third fill basis) is in the neighborhood of only one-half gram. However, as is commonly known, it is difficult to think of compressed gases in relationship to their weight. Approaching the problem from another angle, the cost of nitrogen in the U. S. is $5.50 per 224 cubic feet. It is therefore estimated that the cost of nitrogen propellant for 1000 six-ounce containers will be in the neighborhood of 15 cents — that is, 15 cents for all the nitrogen necessary to fill 1000 six-ounce containers one-third full of nitrogen! This is rather startling, and as a matter of fact the nitrogen cost is *so insignificant* that many of the contract packers are not requiring a charge for the propellant. Not only is the cost of the propellant minimal, but multiple filling on relatively simplified, inexpensive equipment should very much reduce labor costs in filling.

AT THIS point I should like to give a brief report on newer products that are currently being considered for nitrogen filling. Liquid coffee is one of the promising ones. In the process of producing powdered soluble coffee, the beans are roasted, ground, and then cooked to produce a strong liquid extract of coffee. This liquid is then dehydrated through the spray drying method. This spray drying method is quite an expensive process, both in terms of the amount of equipment involved and the process itself. Furthermore despite the claims of soluble coffee distributors, a good deal of flavor and aroma is quite naturally lost in the spray drying process.

In packaging liquid coffee in aerosol form, the coffee should be cooked under a controlled system to preserve the maximum of flavor and aroma. The loss of these qualities in the spray drying method would be eliminated completely, since the liquid coffee would be filled directly into aerosol containers and then hermetically sealed. Thus not only is the cost of spray drying eliminated, but also a better quality of coffee concentrate should be possible. Furthermore, soluble powdered coffee, as it is presently packaged, loses considerable flavor and aroma from the time the can is first opened until the product is exhausted. Since oxygen is absent in the aerosol can, rancidity and oxidation due to aerobic bacteria and fungi are virtually eliminated

(*Continued on Page* 107)

Packaging Show Set For New York

THE evolution of packaging from an art to a science will be the theme of the 27th National Packaging Exposition at the New York Coliseum May 26-30. Sponsored by the American Management Association, the exposition will run concurrently with an AMA packaging conference at the Hotel Statler May 26-28.

More than 40,000 business executives from more than 10,000 different companies are expected to attend the show, which is the first packaging show to be held in New York in 14 years. It will also be the first national show to give such prominence to aerosol exhibitors, with one custom filler, numerous filling and special equipment suppliers, and a number of leading aerosol component suppliers exhibiting their wares and services. Altogether, nearly 400 firms will display their latest in machinery, equipment, materials and supplies, containers, and services.

This year's exposition is the first five-day show in the history of the event, and will occupy all four floors of the New York Coliseum. Machines to be displayed include the latest in aerosol processing and packaging equipment, automatic quality control equipment, more precise electronic instruments, and special marking equipment.

Container exhibits will emphasize advances in technology. There will be increased variety in design and size of plastic containers; more variety in metals for cans, including aluminum; glassware designed for high-speed production lines; plastic-coated glass bottles for aerosol packaging; and plastic bottles with special coatings to protect products that formerly could not be packaged in plastic.

Among the exhibitors at the show will be the following:

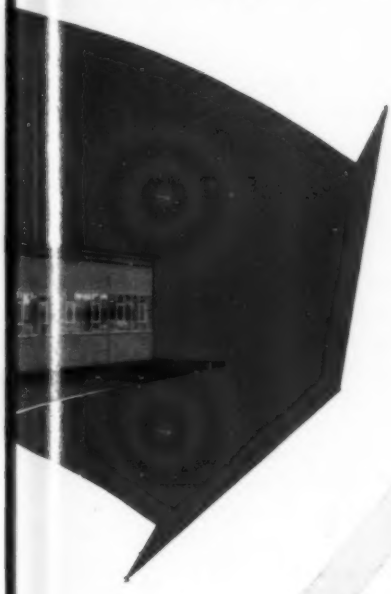
Aluminum Co. of America
American Can Co.
Continental Can Co.
Chisholm-Ryder Co. of Pennsylvania
Crown Cork & Seal Co.
Dow Chemical Co.
E. I. du Pont de Nemours & Co. (Polychemicals Dept.)
Elgin Manufacturing Co.
General Chemical Division of Allied Chemical Corp.
Adolph Gottscho, Inc.
Fluid Chemical Co.
Hope Machine Co.
JG Machine Co.
Kaiser Aluminum & Chemical Corp.
Labelette Co.
Mojonnier Associates, Inc.
Owens-Illinois
Scale Specialties
Standard-Knapp Div. of Emhart Mfg.
Sun Tube Corp.
Toledo Scale Co.
T. C. Wheaton Co.

The exposition will be open for five days, including Memorial Day, for a total of 41 hours. It will be open Monday, May 26, 10 a.m. to 6 p.m.; Tuesday, May 27, 10 a.m. to 9 p.m.; Wednesday and Thursday, the 27th and 28th, 10 a.m. to 6 p.m.; and Friday, May 30, 10 a.m. to 4 p.m.

To enable packaging executives to

(*Continued on Page* 108)

nounce a "blessed event" in the arrival of a *NEW* plant specializing in Nitrogen Pressure Filling*



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Pressure Packaging Overseas

Dr. Tom C. Clark, of Druk-Pak, Ltd., Zurich, reports on a new propellant manufacturer in Germany, and writes about a new Swiss-made aluminum mono-block container machine.

ONE of Germany's largest independent chemical companies, Chemische Fabrik Von Heyden, has just announced its entry into the fluorinated hydrocarbon propellant and refrigerant fields and intends to be on stream by the end of this year. At the start, it will produce propellants 11, 12, 13 and 22, the other numbers being left for later development.

The Von Heyden company had its original plants in the German East zone near Dresden, and when these were taken over by the Soviets and appropriated by their puppet East German government, the Von Heyden management looked around for new chemical manufacturing facilities in the Western zone. They eventually found a site in Regensburg, in an abandoned German government plant which had been used for penicillin production during the war. With the post-war chemical trust disentanglements, government delays, material shortages, etc., they could not get the plant into operation until 1949/50, but have since expanded at a rapid pace. It is the Regensburg plant that will produce the new propellants and refrigerants.

Before the war the company had a U. S. subsidiary (with the same name) but now has no connection with the old U. S. organization. It does, however, have licensing arrangements and close connections with Squibb and others in the Olin-Mathieson group. Among the company's variety of chemical specialty products are pharmaceuticals and they are experimenting with pharmaceutical aerosols.

Officials of the company, with whom we recently talked in Munich, expressed considerable confidence in the future of their new product, especially for the aerosol industry's expanding markets. Some German observers anticipate a 30 million unit production by 1962 and are preparing accordingly. The Von Heyden Company looks forward to getting its share of that propellant business. In Southern Germany, it enjoys freight advantages and several new aerosol loaders, both contract and captive, have already appeared or are planned in that area.

Plant plans and construction are all the work of Von Heyden engineers and all equipment will be procured in Germany. The company operates completely independently (it was never a part of the old IG Farben combine) and has no licenses, "know-how sharing," or other agreements with any other company in connection with its fluorinated hydrocarbon production plans.

No trade name has as yet been chosen for the new propellant line but we were told they will definitely stick to the now standard (except for the UK and France) number designations, 11, 12, etc.

The decision of the Von Heyden company to enter this field marks the first break-away from the big chemical companies which have dominated European propellant production. Naturally, in the background is the expanded European market which should open up with the European Economic Common Market. As previously pointed out in this column, U. S. and non-member-country tariff rated imports will have a hard time competing in the member nation countries with member produced products. This advantage would apply only to the Benelux, but we anticipate it will also take in Austria and the Scandinavian countries, before all provisions of the treaty become fully effective. The export potential of producers in the member countries is therefore not inconsiderable and Von Heyden officials also have their eyes on these markets.

Mono-Block Container Machine

Heretofore, the manufacturing bottle-neck with the mono-block can has been shoulder formation from the one piece body. Trimming and ring forming were standard operations, but drawing down the top for the standard one-inch or smaller openings without being able to work through the bottom presented grave manufacturing difficulties. In addition, only round pieces could be worked. Up to now, two processes have been employed:

One process has been to draw down the neck through a series of dies in a horizontal revolving barrel press, as many as 16 separate draws being required to get the desired shape for bottom and top. This still left two finishing operations, trimming and ring forming, on two other separate machines. For this process the equipment was expensive and production rate low—from 20 to 25 per minute, depending on size. With an extrusion press capacity of between 50 and 55 per minute, two such machines were required to take care of the production from one press.

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The other process calls for spinning and drawing at the same time. This gives larger production but is a delicate operation; and, with the soft metal and close tolerances, scrap loss has been high. Also, the finished shoulder is not especially attractive, since the spinning grooves are clearly visible. A new Swiss automatic machine which has just made its appearance at the Basel Trade Fair appears to overcome these production problems for the formation of the monoblock can. This is the first major break-through in the manufacture of this ideal type container since it first appeared on the market several years ago. The Swiss machine will make not only rounds, but also squares and ovals.

For the complete line, there are two machines offered by this manufacturer. The first has two work stations, one to form the bottoms and the second to roll down the shoulder and neck. With one spindle on this second operation, the machine has a capacity of between 1,800 and 2,000 pieces per hour, and for the standard size aerosol container, with two spindles, its capacity is doubled. This permits the machine to keep up with the press. Both machines are fully automatic. Connected by an elevator or track they can be served by one operator.

For the forming of the shoulder and neck, the can body bottom fits into a cup-like holder and a mandril the size of the final opening is inserted through the open end (the diameter of which remains constant throughout the forming operation) by a tool insert which leaves a lip of approximately 10 mm. The work tool then descends for the forming, moving from right to left against the can body bottom — according to a guide pattern which governs the shape. Practically all kinds of shapes are possible (i.e., the Crown "Spratainer" type, rounded types, etc.) When the forming is finished, the can is automatically ejected from the machine and conveyed by elevator to the trimming and rim forming machine which can finish for the standard 20 mm. glass bottle rim as well as the one-inch metal can opening. All operations—bottom and shoulder forming, trimming and rim forming—are accomplished with cold metal and without any intermediary annealing.

With a change of work tools, similar operations can be performed on squares, ovals and other non-round shapes. This presents interesting design possibilities as well as packaging savings with rectangulars and squares. Pressure tests with these shapes show them adequate for the requirements of all standard aerosols.

The trimming and neck rolling machine is also multi-purpose and with extra work tools may be used for rolling threads and other neck and bottle end operations. Both machines can be used for practically all diameters up to four inches and for all lengths up to about ten inches. Special machines can be built on the same principles for larger sizes.

Even before their public appearance at the Basel Trade Fair, the machines were already in heavy demand in Europe. For the larger aluminum container companies with their own slug making equipment, these new machines, with their capacity geared to the extrusion press, should open up market possibilities heretofore closed because of manufacturing cost and production bottle-necks. In the smaller overseas countries which cannot afford expensive tin plate imports and have no demand for today's high speed automatic can making equipment, they can go a long way toward solving the container problem with a practical and attractive one piece model.

New Plastic Coated Glass Bottle

Tackling the glass problem in reverse order, a German company has come up with an aerosol glass bottle, plastic coated *on the inside*. The plastic—two or three coats—is apparently applied from a spray nozzle in the same manner as inner lacquer in an aluminum can or tube, Drop tests with filled bottles are reported to reveal no splintering or explosive effects, the inner plastic film being strong enough to retain the initial pressure released until an inconsequential atmospheric expansion takes place. The film can be clear, opaque or colored. Advantages are claimed to be: lower production costs, less expensive equipment, tighter fit for the cap and a lower price for the bottle.

We have also seen some new outside plastic-coated glass bottles from Denmark which seem to have a good, smooth finish and a tight bond between glass and plastic, comparable in quality to the best U. S. and U. K. products.

Generally, glass bottle aerosols in the two-ounce and larger sizes seem on the wane in Europe. Discharge rate is too fast for the small quantity and relatively high price. Women complain the bottle is empty too soon, feeling they haven't gotten their money's worth. Fillers are becoming more and more wary of the package because of the high rate of rejects and slowed-down sales turnover. Solving the problem for the small package aerosol for perfumes, eau de cologne, deodorants, etc., is the metering valve just about to make its European appearance.

With a discharge rate of between 50 and 60 grams per minute at room temperature, the two-ounce bottle (about 60 grams content) will spray just a little over one minute with the normal valve continuously actuated. The same bottle and contents with a 50 milligram dosaged metering valve would give over 1,000 separate blasts. But the bottle or container need not be that large. An eight or nine ccm container with an eight gram load and the same dosage valve would give 180 to 200 sprays and the entire package, with an attractive cap, would fit in the purse or pocket. Richford Corporation's miniature aerosol with the replaceable cartridge insert and attractive package has created much interest among European cosmetic houses and appears to be a most satisfactory solution to the problem.

From Germany come price war rumblings, with a leading loader taking the blame, or credit, as the case may be. This company has quadrupled its output in the past four years and this year may well go over

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Consultant's Corner

by Robert A. Foresman, Jr.
Aerosol Consultant
Philadelphia, Pa.

The Morale Approach to Higher Production

PRODUCTION in our industry, or any other for that matter, is based on two things—people and machines. "The American Way" is usually construed to mean that machines are the deciding factor in production, and it is true that specialized machines make entire industries possible. Regardless of that fact, as long as men run machines their use will be influenced by human factors.

Time and again I have had occasion to observe how important this factor is. Some plants will run day in and day out with no down time, no serious quality problems, uniform production, little absenteeism, and so on. Other plants seem plagued by every headache imaginable — machinery failure, erratic quality, sporadic high and low production, and whatever else you can think of, including excessive genuine sickness among personnel.

Occasionally it has been my job to help overcome problems of the second illustration in the foregoing paragraph.

Almost invariably the solution to the problem is a human one, in the sense that morale is more of a factor than is technology. Frequently, at some levels in the production team, the two will be interrelated, but removing a technological road-block without boosting morale will seldom improve things for long. Spot technological solutions are good only for the immediate malady and can and will be applied only to a specific situation. On the other hand, if some method of improving morale can be found, the increased spark of interest and brightened outlook on the part of the people concerned will usually result in solutions being worked out, based on awareness and perceptive thought.

As remote as it may seem, one of the common morale breakers for individuals in industry at large is lack of knowledge of what the job consists of and just what is expected. This can be true of workers at every level, but most frequently plagues intermediate supervision, such as group leaders and sub-foremen whose reactions will be reflected by those under them. In spite of all the weeping and wailing and gnashing of teeth on the part of labor leaders, it would be my guess that there are more dissatisfied workers due to confusion about what is expected of them than there are because of overwork. This does not mean that production workers in such a situation find themselves loafing as a result of poor supervision — what it does mean is that demands are erratic and there is confusion in the allocation of work, with the result that it seems hopeless that any system or organization can come about, and effective effort begins to appear of little value.

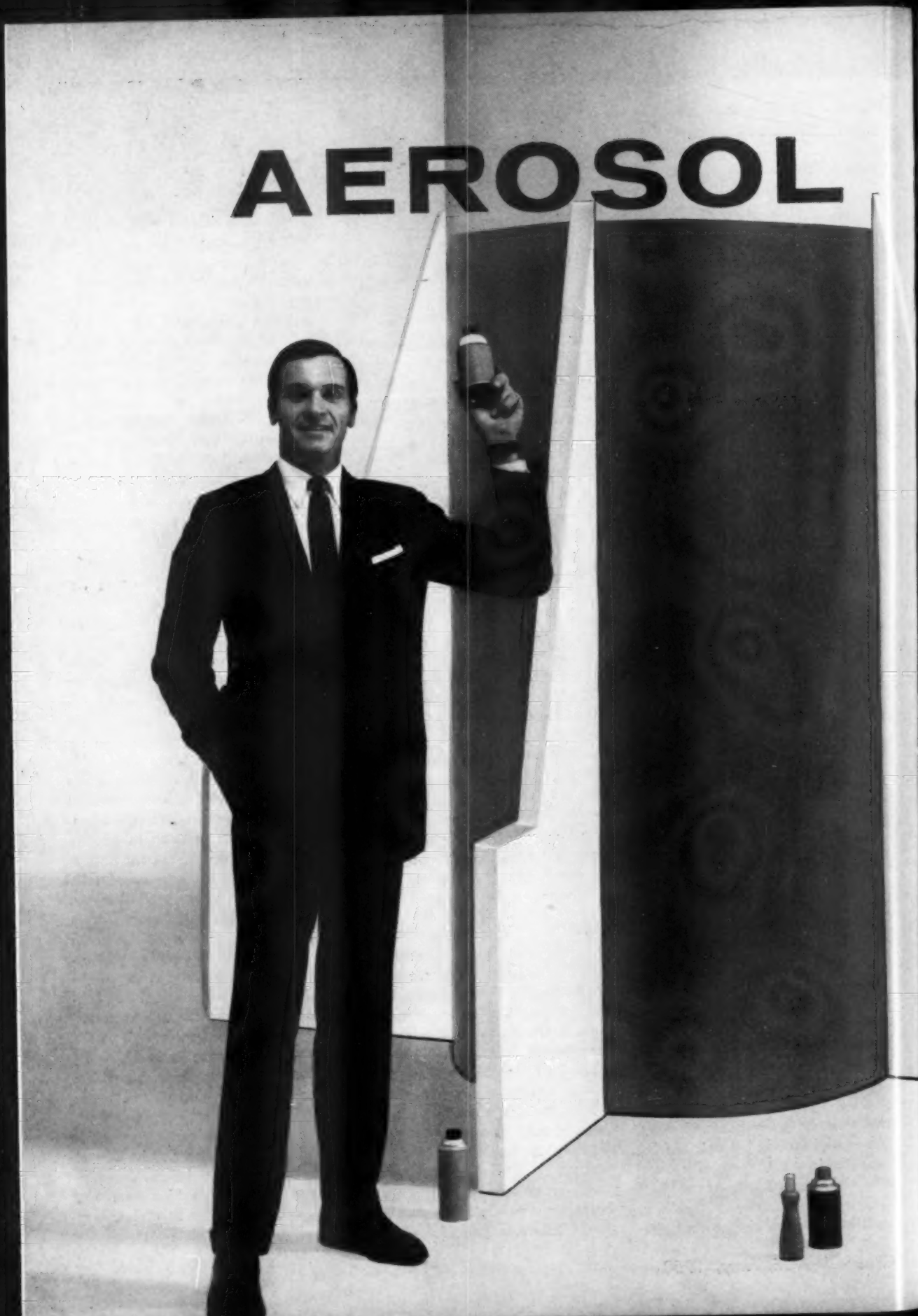
OBVIOUSLY such conditions develop more prolifically the farther they are away from front office management, and it is not surprising that night shifts tend to manifest these defects more often than the daytime groups. This situation is further compounded by the fact that promotion is usually worked from night shift to day shift when, in reality, the best and most experienced intermediate supervisors should be on the job at night.

The greatest single source of confusion for group leaders and subforemen, I believe, is the frequent lack of delineation of responsibility and authority by the front office supervision. Responsibility, without authority, develops cowed, confused, and weak supervision. Authority, without responsibility, (certainly much more infrequent at the subforeman level) results in arrogant, thoughtless, and unfair supervision. Balance must be achieved—all supervisors should have explained and "ground in" exactly what their responsibilities are, and should then be given all the authority necessary to meet every facet of their responsibility, and have it emphasized every time any action bearing on it is considered.

Often the very limits of well-enforced authority will serve to bring about increased awareness of responsibility and heightened morale. A case in point would be where quality control personnel, who are responsible for the checking quality of the plant's output, have the authority to shut down production when quality drops. On the other hand, the production supervisor, who is responsible for maintaining high production of units which meet quality specifications, must bow to the authority of quality control people until he can manage to get his production back to specifications. In this illustration it will be noted there are clear-cut lines of responsibility and authority with resultant awareness and pride in it on the part of the personnel concerned.

Now contrast the foregoing with a case where the quality control people and the production supervisor both have fuzzy notions of their responsibilities and authority. Quality control may well expect to be called on the carpet if bad production goes out, while the production supervisor may

(*Continued on Page* 110)


AEROSOL

AEROSOLS in review

A LEADING toiletries trade magazine, *Beauty Fashion* has devoted its entire March issue to a discussion of some of the technical problems, merchandising approaches, and market predictions for the aerosol market. By-lined articles on pertinent aerosol subjects are included, written by Ralph A. Crane, of DuPont's "Freon" Products Division; by Joseph Kalish, technical editor of *Drug & Cosmetic Industry;* Ruth Kitchen, Dodge & Olcott, Inc.; Donald Tuttle, sales manager of Risdon's Valve Division; and by Edward P. Morrish and Ralph C. Zehner, both of Firmenich. There are also staff articles on sales and marketing problems.

The lead article, by Mr. Crane, analyzes the huge market potential for the aerosol in the cosmetics and personal toiletry product types: "Assuming that the number of potential users —that is, females 17 years of age and over—will total about 61 million by 1960, and that the percentage of women using hair sprays will grow to something like 75% in the next two years, there could easily be a market pool of 45 million users in 1960. At an average unit consumption of about four cans of aerosol spray per woman per year—the purchase frequency that existed among aerosol users in 1956, according to the DuPont study—the aerosol hair spray business in 1960 logically would be in the neighborhood of 180 million containers, with a retail value of about the same number of dollars."

Turning to perfumes and colognes, which he declares have an even more impressive sales potential than hair sprays, Mr. Crane predicts that "Cologne sales for 1960 will total about $80 million, practically all of which could go to aerosols if marketers capitalize on the inherent sales advantages of the pressurized package." He predicts similar sales gains for aerosol sun tan oils, shampoos, aerosol deodorants, hand and face creams, and a whole range of cosmetic types.

Further predictions of the tremendous potential for colognes and perfumes are made by Donald S. Tuttle, Jr., in an article entitled "The Aerosol Engine." "If fragrances follow the trend of hair lacquers," Mr. Tuttle writes, "1959 sales should reach 40 million units, nearly five times the amount sold in 1956."

"What can be a big boom to increased volume is proper selling and demonstration of aerosols. On the retail level, surveys have shown that where women know about aerosol fragrances, they prefer them three to one over conventionally packaged scents. With continuing advertising promotion and selling, aerosol-packaged fragrances should not only become the choice of women now accustomed to buying and wearing fragrances, but they should do much to convert non-users of fragrances into confirmed users."

Mr. Tuttle credits developments and improvements of valves and actuators with making possible the advances of aerosol packaging in the cosmetic field, and concludes his discussion with a brief outline of the functions of valve and actuator.

Some of the technical difficulties of converting conventional aerosol perfumes to aerosol packages are outlined by Messrs. Morrish and Zehner in their article, "Sudden Fragrance." They point out that the perfumer's concept of studying perfumes on blotters and on skin had to be changed. "When a perfume fragrance is released from an aerosol, the fragrance attacks the organoleptic senses and neuro-sensory activity in a manner never before experienced in the perfumery art. Suddenly you smell the whole perfume concept: there are no topnotes, no heart notes, and no residual notes. Suddenly, the odor perceptive senses are exposed to a cacophony of odor components. As can be seen, a perfumer for aerosols must have extraordinary, extra-perceptive senses to produce aerosol perfumes under less than six months shelf study. Aerosol perfuming is the problem of adjusting perfumery components—new, and those already known — to this new vehicle.

". . . In aerosols, all of the perfume components must be completely soluble, otherwise crystal formation or gum resin forms may quickly block valves after the alcohol and other co-solvents have evaporated. Many of you perhaps remember precipitates and deposits that were found in early aerosols that ranged from tiny flecks to heavy, white flocculences; red, gummy deposits; and insoluble, oily films that found their way into the top of aerosols or deposited on the sides of glass containers. Some of the causes of these troubles were products like oakmoss, olibanum, styrax resins, balsam tolu, sandalwood, patchouly, and vetivert. All give great body and particularly excellent notes to many classic perfumes.

"Certain of the perfumery components that are used in aerosols require extraordinary perfumery and chemical purity. In aerosol perfumes, a concentration of one part in one million will prove as strong a concentration as one part in ten thousand in conventional perfumes. Purity of perfumery components must, therefore, be a vital factor in aerosol compounding."

". . . A yet undeveloped area of aerosol fragrance is the food field. Here, perfuming will play a very important part in the success of these

products. Since fine food is enjoyed by odor perception and not taste, as taste is basically bitter, sweet, salt, and sour; aerosol food products will present a new challenge."

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AN excellent article on nitrogen aerosols by H. R. Shepherd, president of Aerosol Techniques, Inc., Bridgeport custom filler, is featured in the February issue of *Food Processing* magazine. In it he points out that the use of nitrogen in the package insures, for the first time, that "*The product comes out of the container in the same physical condition.*" (the italics are his).

He declares that there is a substantial drop in the pressure as the contents are emptied. "With original pressure at 90 psi and 25% headspace, pressure for the last drop dispensed will be more than 20 psi. Data indicate that loss of nitrogen on storage is negligible, which contrasts with the appreciable loss of refrigerant propellants, probably by diffusion through the sealing compounds.

"The nitrogen pressure packaged food retains its inert atmosphere protection throughout the life of the container. There is another inherent advantage—the contents are hermetically sealed after each use, thus preventing contamination from outside sources, as well as preventing loss of volatile flavors and fragrance from the food itself.

"These protective advantages make a larger size package feasible for products which heretofore have been marketed in small, essentially single-use containers to avoid deterioration after the package is opened. Cost of the single, large pressure container is usually less than the cost of the several smaller conventional containers (having the same total volume) which it replaces.

"Nitrogen can propel products from thin liquids to thick pastes, with viscosities up to 100,000 centiposes (molasses) in their original state. The upper limit of the viscosity of the product to be dispensed by nitrogen under pressure, however, is set not only by flow of the product through the dip tube and the valve orifices, but also by flow to cover the bottom of the tube when the container has been placed on its side and then turned to an upright position. Amount of product wasted because it sticks to the sides of the can can be reduced to one percent or less by special linings."

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A DISCUSSION of the history, the advantages, and some of the drawbacks of pressure packaging with compressed gases is included in a feature article by Morris J. Root, technical director of G. Barr & Co., Chicago, in the April issue of *American Perfumer & Aromatics*. Entitled "Pressurized Packages for Cosmetics," the article outlines a number of pertinent patents on the subject, beginning with U. S. Patent 24,894, issued in 1862 to John N. Lynde.

Pointing out that one serious drawback in the use of nitrogen is the fall-off of pressure as the product is expended, Mr. Root declares that non-aerated liquid dispensing will probably offer the greatest number of possibilities for toilet goods.

"The pressure package is especially desirable for those thixotropic products which, when sitting on the shelf for some time in a bottle, are very difficult to empty. Such products, because of their thixotropic nature, are thinned when forced through the valve of a pressurized package. Cosmetic products which can be dispensed in non-aerated form with a nitrogen pressurized package include toothpaste, antiperspirant cream, hand cream, hair dressing, bath oil, shampoo, cleansing cream, lotion make-up, and vanishing cream. As spray products, there are such possibilities as colognes, mouth wash, and body rub.

"Pharmaceuticals also offer several products which could advantageously be packaged in this manner. Vitamins, which are oxidized by air, can be dispensed drop-wise without exposing the container contents to the atmosphere. Other pharmaceuticals that lend themselves to this form of packaging are ointments, lubricating, and germicidal preparations.

Two new products, an **Aerosol Breath-Spray** and the **Graham Topical Spray**, have been introduced by Graham Chemical Corp., Springfield Gardens, N. Y. Both use Wheaton coated bottles, "Genetron" propellant, and VCA valves, and are filled by Old Empire, Inc., Newark, custom filler. Topical spray has a special directional applicator developed by VCA and Old Empire.

Kiefer "GAS JET" AEROSOL PRESSURE CHARGING UNIT

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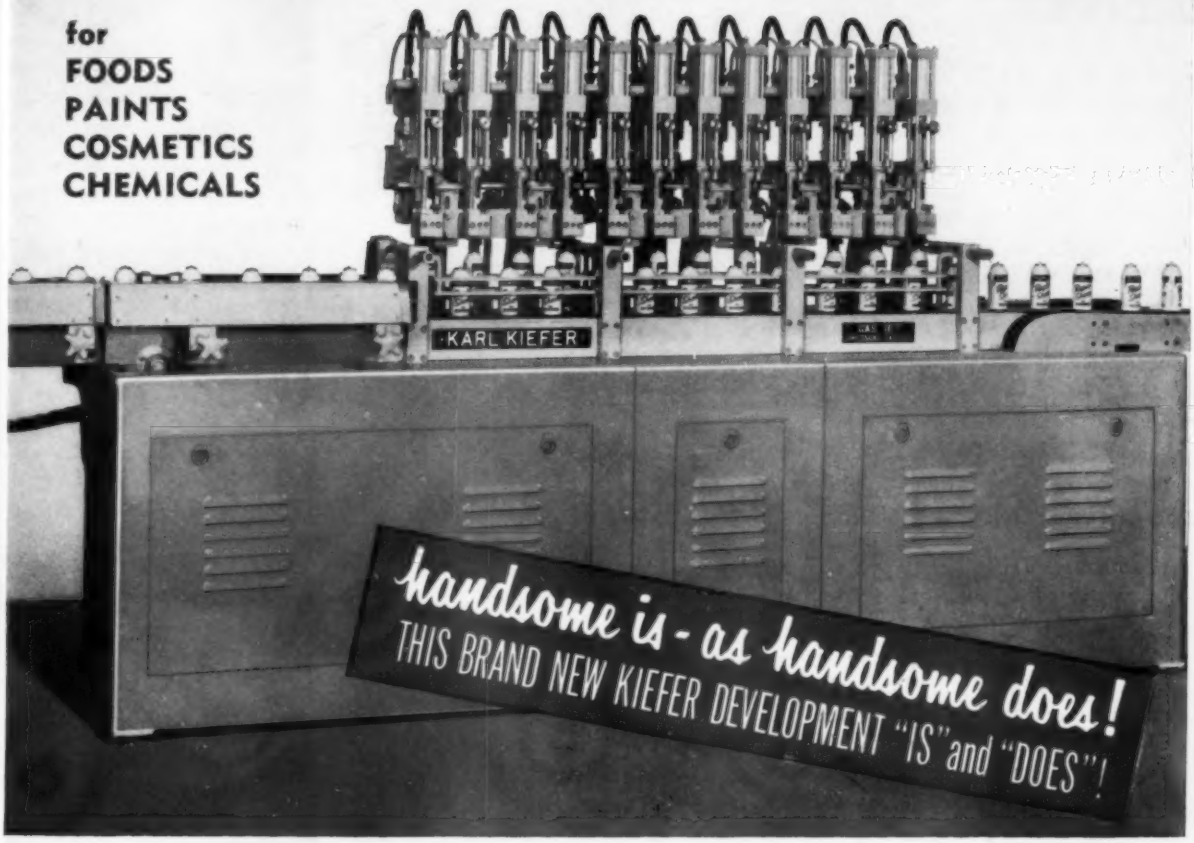

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JACK PICKTHALL, of Polak & Schwarz (England) Ltd., leader of the anti-uncoated glass aerosol faction, has added further fuel to the controversy in the March issue of the British trade publication, *Soap, Perfumery & Cosmetics*. In his latest article, which is liberally illustrated with action photographs, Mr. Pickthall reports on experiments with three U. S. brands of aerosol colognes, one five fluid ounces, one two, and one 1.5 fluid ounces. As in his previous articles, he uses beverage bottles as a comparison of the bursting effect of the aerosols.

In a discussion of the test results outlined in the article, Mr. Pickthall declares: "There will undoubtedly be other makes on the American market and these may be less or more dangerous than the one we have obtained. Our remarks apply only to the three types sent to us.

"The bottle containing 1.5 ounces of fluid gives a fairly good spray. On breaking, it exploded with great force and propelled pieces of glass violently to all parts of the room. In our opinion, it is more dangerous then the bottles filled to our formula 'B' in our original article (*Soap, Perfumery and Cosmetics* Feb. '57 and *Aerosol Age* Nov., Dec. '57).

"The bottle containing two fluid ounces gave a firm, long spray and the explosion could be compared with that obtained from our filling 'A'. The bottle containing five ounces gave a good spray and exploded violently on dropping. Here again the pieces of glass were propelled spectacularly and forcibly to all parts of the room. This explosion again, in our opinion, was worse than that obtained from our filling 'B'."

Spaire a combination fire extinguisher and emergency tire pump, is a new product of Liquid Glaze, Inc., Lansing, Mich. Packager of the product is Gene Rose Co., Chicago, which, together with Liquid Glaze, developed it. Retailing at $2.50, it will fill a tire from zero to 22 pounds in six seconds.

Mr. Pickthall takes issue with statements in Maria Wiener's article in *Aerosol Age* which criticized Mr. Pickthall's original test formulations as unrealistic and too unlike formulations used in the U. S. "Though she says her company's recommended formulations for glass packaging contain less than 36% propellant by weight," he points out that the test samples from the U. S. market probably contain more than 36% propellant, and "I and my associates strongly suspect the presence of difluorodichloromethane.

"From the experiments we have made, the American two-ounce bottle is shown to be at least as dangerous as our filling 'A' and the remaining two bottles are even more dangerous than our filling 'B'. This means in effect . . . that there are currently on the market in the U. S. uncoated glass aerosols of a type even more dangerous than our own test fillings that have been critized as being unrealistic.

"It seems to us very desirable . . . that the inherent dangers of certain types of package should, when recognized and confirmed, be pointed out and, if necessary, be continually reiterated. Even if we had not proved that certain firms were still using dangerous aerosol fillings, there is no doubt that the transatlantic technical literature is full of formulae and suggestions (some of quite recent origin) which give the newcomer a false idea of what can be put into an uncoated bottle. It is a very great pity that this should be so, particularly as so much valuable pioneer work on aerosols has been carried out by enthusiasts in the U. S."

Mr. Pickthall, in his final paragraph, points out that any possible dangers with uncoated glass aerosols can be virtually eliminated "by adoption of the simple measure of effectively plastic-coating the aerosol bottle, and may even be solvable by other means not generally known or used at the present time."

•

AN aerosol method of spraying eggs with a sealer a few hours after they're laid, in order to keep them "farm fresh" from nest to skillet, is described in the April issue of *Farm Journal*. A colorless, odorless, tasteless sealer of clear mineral oil or a commercial aerosol preparation is sprayed on the eggs while they are being packed for shipment by the farmer. The oil seals the pores of the eggs and holds in moisture and carbon dioxide, which, the periodical reports, maintains the grade of the eggs until they are eaten.

Research for the project has been done at Iowa State College, and at Michigan State, Minnesota and Purdue Universities. Purdue University researchers W. J. Stadelman and M. L. Wilson are reported to have developed the aerosol concept. "They pack the eggs on the small end in the cartons, and spray the large. The fine mineral oil mist doesn't get to the egg tips that way, but the large pores are on the large end anyhow, says Mr. Stadelman. Tests at the University of Minnesota by M. H. Swanson show that sealing just one-half to three-fourths of the shell surface is as effective as oiling the entire shell."

The farmer sprays in small ovals around the center part of the flat of

(*Continued on Page* 106)

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NEWS of Pressure Packaging

Carbide Appoints Husted

Elbert E. Husted

Union Carbide Chemical Co., division of Union Carbide Corp., New York, has appointed Elbert E. Husted sales manager-fluorocarbon propellants.

The appointment is another step in the company's organization for marketing fluorocarbons that it will produce at a new unit at Institute, West Virginia. The unit, designed to turn out 50 million pounds of fluorocarbons per year at capacity, is slated to go on stream in the fall.

Mr. Husted will have charge of sales to the aerosol industry, and will make his headquarters in New York City.

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Lever Acquires Air-Wick

Trademarks and marketing rights for "Air-Wick" in the U. S. have been acquired by the Lever Brothers Co., New York, from Seeman Brothers, Inc. The move marks Lever's first entry into the room deodorant field. "Air-Wick" was first brought out by Airkem, Inc. in 1943, and currently includes an aerosol line of room deodorants. It is being packaged by five independent canners around the nation, and, according to Lever Brothers, plans call for continuation of this type of operation.

Almost immediately after the first announcement, Lever Brothers announced the awarding of the advertising account for the product to Foote, Cone & Belding, New York. The account had been serviced by Norman, Craig, & Kummel, but that agency was removed from consideration because it handles the products of Colgate-Palmolive, a competitor of Lever.

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Shulton Names Foy, Lantz

George Foy has been named manager of commercial development by Shulton, Inc., Clifton, N. J. He will be responsible for the company's advertising, sales promotion, market research, and preparation of new markets by the sales department.

At the same time the company named Walter P. Lantz as advertising director. He was formerly a member of the general executive committee of Bristol-Myers and is board chairman of the Audit Bureau of Circulation.

Carroll to Babbitt Post

B. T. Babbitt, Inc., New York manufacturers of household cleaning products, has announced the appointment of Owen Carroll as product manager in its Marketing Service Group.

He will be responsible for the marketing of a new product, "Cameo" copper cleaner, and will act as coordinator in the introduction of aerosol products into the grocery field. He has been associated with Babbitt for three years and was formerly assistant to the director of marketing.

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Tilling to Expand

Thomas Tilling, British holding company which has extensive aerosol holdings through its subsidiary, SAFCA Ltd., has announced the completion of arrangements with Commercial Plastics Ltd. for joint operations in the formation of a new aerosol company. The firm will operate as an aerosol filler and will also produce a new line of aerosol valves.

TGA Lists Program For June 5 Meeting

The Toilet Good Association last month announced the program for the meeting of its Scientific Section, to be held June 5 at the Waldorf-Astoria Hotel, New York. The highlight of the meeting's program will be a paper on "Pressure Packaging With Nitrogen" by Morris J. Rott, technical director of G. Barr & Co., Chicago custom filler.

Also on the program will be:

"Shelf and Accelerated Testing of Perfume Compounds in Finished Cosmetic Preparations," by Victor DiGiacomo and Walter Wynne, Givaudan-Delawanna, Inc.

"Lanolin Derivatives as Solubilizers" by Lester I. Conrad, Kalmen Motiuk, and Henry Maso, American Cholesterol Products Inc.

"Antiseptics versus Antibiotics for the Control of Skin Bacteria," by Samuel M. Peck and Dr. Irwin Kantor.

"Principles for Evaluation of the Safety of Cosmetics from the Standpoint of Inhalation," by Dr. Henry J. Horn, Hazleton Laboratories.

•

Yardley Appoints Director

Yardley of London, Inc., New York, aerosol toiletries marketer, has announced the appointment of James J. Mahoney to the newly-created position of director of merchandising. He will be responsible for the marketing and merchandising of all Yardley products in the U. S.

Before joining Yardley, Mr. Mahoney was a staff member of McKinsey & Co., Inc., management consultants, and prior to that with Vick Chemical Co.

Metropolitan Colleges Unveil Aerosol Laboratories

AN aerosol research laboratory to be devoted primarily to pressurized pharmaceutical development projects was officially opened last month at the Columbia University College of Pharmacy, New York.

Dr. Leonard A. Scheele, former Surgeon General of the United States and now president of Warner-Chilcott Laboratories, was the featured speaker at the presentation of the new laboratory on April 30, at the College of Pharmacy building, 115 West 68th Street, New York City.

The laboratory was built with the aid of a grant from Aerosol Techniques, Inc., of Bridgeport, Conn., and will be under the direction of Prof. Joseph L. Kanig of the faculty of the College of Pharmacy. It will be utilized as a part of the graduate program for research projects involving the development of pharmaceutical pressurized dosage forms.

The apparatus in the laboratory has been specially selected to provide the versatility required for the development and evaluation of aerosol pharmaceuticals and includes equipment for handling a variety of liquefied and compressed gases.

A major portion of the proposed research will be devoted to identifying and studying the variables affecting the stability and efficiency of medication in aerosol form. It is also contemplated that the research programs will seek to establish methods of quality control and evaluate procedures for pressurized formulations.

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THE College of Pharmacy of St. John's University, has installed a similar laboratory at their downtown division, 96 Schermerhorn Street, in Brooklyn. This laboratory will be equipped with the latest aerosol filling equipment, as well as with many of the scientific instruments required to carry out basic research dealing with the principles of aerosols and the fundamentals of aerosol formulation.

This laboratory will be under the supervision of Dr. John J. Sciarra, who has been associated with aerosol work for several years. In 1954 while at the University of Michigan, Dr. Sciarra worked with Dr. Albert Mattocks and initiated an aerosol research laboratory. The results of this work were published in *Aerosol Age* (September 1956). Since then he has delivered several talks and lectures to pharmaceutical groups as well as to include the topic of aerosols in several of his courses.

Dr. Joseph L. Kanig, right, instructs a graduate student in Columbia University's new aerosol laboratory. Laboratory filling and crimping equipment may be seen to the right.

Dr. John J. Sciarra

The establishment of this laboratory will enable St. John's University to offer courses in aerosols both on the graduate and undergraduate level. Faculty members and graduate students will be able to conduct research on aerosols and present their findings to the aerosol industry. According to Dr. Sciarra, St. John's will be able to serve the aerosol industry not only with basic information but with competent personnel trained in the fundamentals of aerosols.

In line with the University's plans for expansion, Dr. Andrew J. Bartilucci, Dean of the College of Pharmacy, announced that as of September the College of Pharmacy will be located in the new $5 million Science-Pharmacy Hall on the Jamaica, N. Y. campus. In this new unit will be a complete and modern, fully equipped, research laboratory to be used exclusively for aerosol research. This laboratory will provide expanded facilities and allow for the addition of other pieces of equipment.

Frederick Lodes, president, and Dr. Francis Mina, technical director, of Lodes Aerosol Consultants, Inc., New York, have provided a great deal of technical assistance to Dr. Sciarra and Dean Bartilucci in the establishment of this laboratory and the type of equipment required. Lodes Aerosol Consultants will continue to advise the group as to information of interest to the aerosol industry.

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To Sell Kenya Pyrethrum

Greene Trading Co., New York, former sub-agent for pyrethrum interests in Africa, announced last month that it will continue to act as sub-agent in the U. S. for the sale of pyrethrum extract originating in Kenya's only processing plant. The plant is owned by The East African Extract Corp., Ltd., Nairobi, which has an annual allocation of flowers from the Pyrethrum Board of Kenya. The plant has been producing pyrethrum extract for world markets for the past 11 years.

FTC Drops Trade Restraint Charges Against Roux

FEDERAL TRADE COMMISSION recently dropped charges against Roux Distributing Co., New York, leading distributor of aerosol hair touch-ups and dyes. The company had been charged with unlawful restraint of competition among its wholesale distributors.

According to J. Earle Cox, the FTC examiner, Roux's policy of three-way classification of its wholesalers is not in violation of the antitrust laws or unfair trade practice. The company has set up three wholesaler classifications:

Jobber—selling to drug wholesalers, beauty supply dealers, or other jobbers;

Drug wholesaler—selling to drug stores, department stores, and similar retailers only;

Beauty-Supply Dealers—selling to beauty salons, beauty schools, and beauty operators only.

The first two categories were granted 25% discount and the beauty-supply dealers 35%. Wholesalers who did not choose a category or who made sales outside the one selected were discounted as customers. Thus, the report continues, the latter wholesalers lost all their Roux accounts or had to buy Roux products elsewhere at higher prices.

After noting that competition was changed due to this classification system, the examiner found, "There is nothing in the record to show that competition was lessened, nor that it was increased because of the change."

Mr. Cox characterized Roux's wholesaler classification as "reasonable," and rejected as unsupported by the record the contention that Roux threatens to cut off its wholesalers if they handle competing products. Ten of the company's dealers had testified that they were discontinued after the adoption of the classification policy. The examiner ruled, however, that discontinuance of customers is not illegal in itself, and cited several court decisions establishing, in the absence of any antitrust laws, the right of the manufacturer to select his own customers."

Roux claimed that it no longer requires its customers to confine sales to one category, but Mr. Cox emphasized that his order of dismissal was based on the legality of the sales program and not on the claimed abandonment.

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Pyrethrum Shipment by Air

7000 pounds of liquid pyrethrum extract were recently delivered in a single shipment direct from Nairobi, Kenya, to International Airport, New York. The consignment was ordered by McLaughlin Gormley King Co., of Minneapolis, a leading manufacturer of insecticides based on pyrethrum. It was supplied by the Pyrethum Board of Kenya.

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Island Moving to Fla.

Island Equipment Co., Flushing, L. I., a major supplier of heat test tanks, container unscramblers, and other aerosol line equipment, has announced that its factory and general offices will be moved to Miami, Fla. on or about May 16. However, the company will maintain a New York sales office at its present address, 135-20 39th Avenue, Flushing 54, L. I.

The company's Florida address will be P. O. Box 380276, Miami 38.

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New Filling Company

The Aero-Fill Co., a new custom filling firm, will begin operations in Ransom, W. Va. within the next few months. The company's products will include shaving creams, hair lacquers, room deodorants, insecticides, and sun-tan lotions.

—Convention Calendar—

Chemical Specialties Manufacturers Association, 45th Mid-Year Meeting,
Netherland Hilton Hotel, Cincinnati, Ohio.....May 19-21

Institute of Food Technologists, Annual Meeting,
Palmer House, Chicago, Ill......May 25-28

American Management Association Packaging Conference,
Hotel Statler, New York, N. Y......May 26-28

National Packaging Exposition (American Management Association),
Coliseum, New York, N. Y......May 26-30

Toilet Goods Association, Scientific Section,
Waldorf-Astoria Hotel, New York, N. Y......June 5

Toilet Goods Association, *Poland Spring House, Poland, Me.*.....June 25-29

Western Packaging & Materials Handling Exposition,
Civic Auditorium, San Francisco, Calif......Aug. 11-13

Canadian Chemical Specialties Manufacturers, 1st Annual Meeting,
Queen Elizabeth Hotel, Montreal.....Nov. 13-14

Chemical Specialties Manufacturers Association, 45th annual meeting,
Commodore Hotel, New York, N. Y......Dec. 9-11

are you considering a food aerosol?

Let D&O Flavor it!

A technical assistant in the D&O Laboratory demonstrates the filling of a food aerosol with nitrous oxide.

THE POTENTIAL in the field of food aerosols has long been recognized ...and with it the need for compatible flavors. To meet this newest of food industry challenges, D&O has established a special section of the Aerosol Testing Lab for experimentation with pressure filling food products. Nitrogen, nitrous oxide and carbon dioxide/nitrous oxide filling equipment is available for the convenience of food processors interested in entering this expanding area of their industry. These facilities, added to D&O's traditional knowledge and experience in the flavor field, are yours on request. Consult D&O.

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DeMert & Dougherty Completes Move to New Plant

THE consolidation of all the Chicago facilities of DeMert & Dougherty, Inc. has been completed at the firm's new location at 5000 West 41st Street, Chicago. This eleven-acre tract, situated on Mile 317 of the Chicago Sanitary and Ship Canal is serviced by barge, rail and truck.

Offices, warehouse buildings and a 5,000,000-gallon bulk storage terminal for liquid chemicals, as well as the most modern production facilities for aerosol packaging and liquid chemical packaging, are housed at the new location. This site, purchased last August by Mid-America Chemical Terminal from U. S. Industrial Chemical Company, a division of National Distillers and Chemical Corporation, is on long-term lease to DeMert & Dougherty.

Equipment formerly used by U. S. Industrial Chemical Co. has been converted and new facilities have been added to provide additional office space and production facilities for DeMert & Dougherty and its affiliates, Chemical By-Products Co., Inc., Mid-America Chemical Terminal, and Aeropak, Inc.

In addition to its Chicago facilities, which handle all production, D & D has packaging plants and warehouses in St. Louis and Kansas City.

"This expansion program," said Leonard Drell, president of D & D, "will enable us to have all our executive and general offices under one roof, and to expand production facilities for all of our divisions. We are especially proud of our new aerosol line, said to be the most modern in the entire country."

Another feature of this expansion has been the enlargement of research laboratory facilities. Paul Peterson, vice-president in charge of production, said, "D & D's new research laboratory is about twice as big as our former facilities.

D & D's aerosol affiliate—Aeropak, Inc.—has a capacity of over 1,000,000 cans a week. Filling, sealing, and packaging is completely automatic at the rate of 120 cans per minute. Aeropak currently fills on a contract basis for many of the country's leading manufacturers, and products packaged include shave cream, hair sprays, deodorants and cleaning compounds.

According to the company, all its divisions are benefited from the integration of operations. Increased storage and mixing capacity enable D & D and its affiliated companies to receive bulk shipments by barge, rail or truck in increased quantities. Over 125 storage tanks ranging in size from 500 gallons to 400,000 gallons are now in use and are also available for public terminal operations.

The new facilities are an expansion of D & D operations formerly handled at three Chicago locations—4814 Richmond, 3001 West 47th Street, and 3711 California Avenue. As of April 1, all operations were transferred to the new location at 5000 West 41st Street.

•

Joins Aerosol Age Staff

Ralph Clarke Williams joined the staff of *Aerosol Age* last month, as an advertising salesman in the eastern area. He works directly with Ralph Dorland, advertising manager.

Mr. Williams has worked in the advertising department of Macy's and most recently held a position as assistant to the advertising manager at United Artists, New York.

•

Fritzsche Argentine Branch

At a press conference held late last month John L. Cassullo, president of Fritzsche Brothers, Inc., New York, manufacturer and supplier of essential oils, flavors and aromatic chemicals, announced the formation of Fritzsche Brothers Argentina, S.A. with offices, plant, and manufacturing facilities in Buenos Aires.

Scheduled to commence operations on the first of April, the new company has been set up to supply South American manufacturers with essential oils, perfume and flavor compounds of the same type, quality and uniformity as those now available to U.S. manufacturers through the parent concern. The new firm will also supply South American branches of large U.S. manufacturers with direct delivery of perfume or flavoring specialties identical to those now being supplied to American manufacturers.

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Toilet Goods Sales Up

Total sales of perfumes, cosmetics and other toilet preparations (excluding toilet soap) reached a record high in 1957, according to the Toilet Goods Association. The new record figure is $1.43 billion, or an increase of approximately 8.3% over the 1956 figure (the previous all-time high).

Shaving preparations, due to the continued popularity of the "more expensive" (per shave) aerosol, again increased by nearly 8½%, with food store sales gaining more than 12%. TGA points out, however, that total units of shaving cream and similar preparations were not greater, and possibly were even lower than for 1956.

Fragrance products as a whole showed a slight increase over 1956, but this increase was largely due to heavier sales of toilet water and colognes. Actual perfume sales were practically the same as in the previous year, although some houses showed relatively sharp sales increases.

For the first time sales through food stores were higher than sales from house-to-house and approached total sales through department stores. Drug store sales showed a percentage decline and fell below 29% of the total market for the first time.

•

Revlon Names Blumenthal

Philip Blumenthal who had been assistant secretary, has been elected to the position of secretary of Revlon, Inc., New York cosmetic marketer. Prior to joining Revlon, he was a member of the law firm of Blumberg, Singer, Ross, and Gordon.

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Woolley Leaves Babbitt

John L. Woolley has resigned as vice-president and director of sales of B. T. Babbitt, Inc., New York, after 21 years with the company. No successor has yet been named.

Old Empire Names Toome

Dr. Hedwig Toome has been appointed to the laboratory staff of Old Empire, Inc., Newark, N. J., as assistant research chemist in aerosols. Dr. Toome received her doctor's degree at the University of Vienna, Austria.

•

Emson Forms German Co.

Emson Research, Inc., Bridgeport, Conn., has announced the formation of Emson Aerosol GMBH of Germany, a new company that will have exclusive license to manufacture and sell Emson's metered valve, stainless steel containers, and special oral and nasal adapters. Karl Huber is general manager of the new firm.

All packages made by Emson Research and currently being marketed in U. S. will be available to the German pharmaceutical, cosmetic and chemical firms. According to Philip Meshberg, Emson president, formation of the new company "should result in a considerable saving in both time and money which it normally takes to market a new product; not to mention the problems that could be encountered with regard to patents." Similar manufacturing facilities are planned for Italy, Argentina and other large countries.

All German inquiries should be addressed to Emson Aerosol GMBH, Theodor-Rehbock-Strasse 5. Karlsruhe, Germany.

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Walter Frank Moves

The Walter Frank Organization, Hillside, Ill., aerosol package designers and cap suppliers, recently moved its office to a new address at 4100 Warren Ave., Hillside. Telephone number of the new office is LInden 4-6600.

•

AR Appoints French Agent

Aerosol Research Co., Chicago, has licensed Etablissements Leon Reboul, Creteil (Seine), France to produce its valves in France. It is reported that the licensing agreement covers France, Germany, and several other Continental European countries.

The Reboul company is said to be well known in the cosmetic field and manufactures a complete line of caps, holders and closures for lipsticks, stampings, etc.

•

Allied Drops "& Dye"

The Allied Chemical & Dye Corp., New York, last month changed its name to Allied Chemical Corp. One of the company's divisions, General Chemical, is a major aerosol propellant producer, and another, Solvay Process, a major methylene chloride supplier.

In announcing the change, Glen B. Miller, president, said that the new name more clearly reflects the broad nature of the company's position in the chemical industry, and does not single out a particular division or field of activity.

•

Revlon to Expand Line

Introduction of a variety of new aerosol products will be a major factor in the operations of Revlon and its subsidiaries this year, Charles Revson, company president, revealed recently. Among the new products will be "Revlon Living Curl", described as a new type of spray which is "years ahead of the field"; and the company's "Top Brass" line for men.

Gavin Joins Arthur Little

The election of General James M. Gavin as vice-president and a director of Arthur D. Little, Inc., was announced early last month at a press conference by the industrial research company. General Gavin will assume his duties as an administrative officer of the company on June 1 at Acorn Park, the ADL research center in West Cambridge, Mass. Prior to his retirement on March 31, General Gavin was Army Chief of Research and Development.

Arthur D. Little, Inc., has been engaged in industrial research since 1886 and has been a leader in the development of applications of the sciences, engineering, and economic research to industry. With main offices and laboratories in Cambridge, ADL operates laboratories in Chicago and San Francisco and offices in New York, Washington, and Puerto Rico.

•

New Perfumery Line

Tuvaché, Inc., New York perfume house, last month introduced a new line of aerosols for its lilac, violet, and Moroccan rose floral sprays. Packaged in two-ounce Wheaton coated bottles, the containers use Risdon valves and will retail at $2.

Food Symposium Program Announced for IFT Meeting

Five papers dealing with food aerosols will comprise the Symposium on Pressurized Foods to be presented by members of the Chemical Specialties Manufacturers Association at the annual meeting of the Institute of Food Technologists in the Palmer House, Chicago, May 25-28. The Aerosol Division of the CSMA will also sponsor an "Aerosol Information Center" at the meeting.

Titles of the papers are "The Background and History of the Pressurized Food Industry," W. E. Graham, Clayton Corp., St. Louis; "Technical Factors in the Packaging of Pressurized Food," Dr. D. H. Johns, American Can Co., Barrington, Ill.; "Special Problems in Pressurized Food Packaging—Heat Preservation of Pressurized Foods," E. D. Giggard, Continental Can Co., Chicago; "How a Food Manufacturer Can Institute a Pressurized Food Program," R. C. Webster, Ohio Chemical and Surgical Equipment Co., Madison, Wis.; and "The Food Manufacturer Looks at the Potential Pressurized Food Market," Dr. William Martin, Heublein, Inc., Menlo Park, California.

Plans have been completed for the exhibition booth of the Aerosol Division of the CSMA at the Institute of Food Technologists Convention. 11 companies will participate in the booth, for which there has been issued a special CSMA bulletin describing the services of each of the companies represented.

The exhibit will be open from 1:00 p.m. to 5:00 p.m. Sunday, May 25th; 11:00 a.m. to 6:00 p.m. on Monday, May 26th, and Tuesday, May 27th; and 11:00 a.m. to 5:00 p.m. on Wednesday, May 28th.

Why Du Pont's Versatile 90% Methoxychlor (OIL CONCENTRATE) Should be Included in Your Aerosol and Oil Spray Insecticide Formulations

1. When methoxychlor is combined with pyrethrins and piperonyl butoxide, the result is fast knockdown and high kill! This combination is extremely effective against flying insects and is also a potent contact killer of crawling insects.

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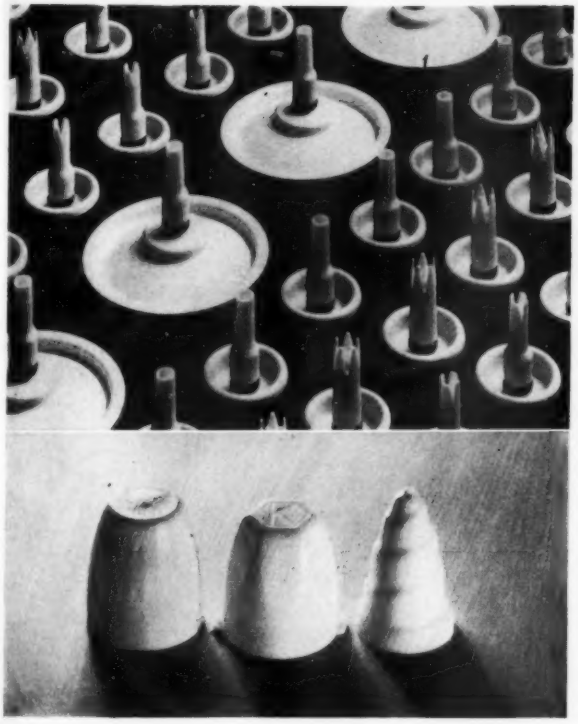
Super Whip Introduces New Valve Line



Super Whip's new line includes values for a wide range of food and non-food foam products.

A new line of valves, specifically engineered for the growing pressurized foods industry, has been announced by the Super Whip Valve Co., of Chicago. With 11 years of design and production experience on millions of valves for whipping cream, toppings, and foam type products, Super Whip reports that it has designed and tested the new line of valves especially suited to handle most of the proposed food products of the foam and liquid variety.

The valves have a streamlined appearance and operate in the inverted position. Orifice size is continuously variable, allowing easy discharge control from a very small amount to a heavy flow—as finger tip deflection of the discharge nozzle is increased.

A safety factor is built into the valve. A small movement of the nozzle, such as an accidental touch, will not open the valve to allow a loss of the closely measured nitrogen gas.

The soft plastic dust cap doubles both as an attractive outer covering and as a leak detector. Based on a patented sealing action, the cap will blow off the can in the event of any type of leakage. Different external designs can be supplied for individual requirements, such as trade marks.

Further information about the valves and the company's laboratory facilities for filling and pressurizing customers formulae, are available by writing Super Whip at 4101 N. Rockwell Street, Chicago 18.

•

Aerosol Suntan Scents

Schimmel & Co., New York, last month issued a list of special perfumes found compatible with aerosol suntan ingredients. The list includes a number of florals and bouquets.

New Heat Test Tank

A new heat test tank that is claimed to "perform better and more dependably than any other water bath system" has been introduced by The Wallace Co., Bridgeport, Conn. The unit's conveyor chain is made of nylon, with a 4½-inch wide chain which is impervious to all aerosol formulations.

The water circulation system is arranged with adjustable infeed distributors at both ends of the tank, providing a continuous flow of clean water across the discharge and infeed ends toward the center, where the pump section and overflow connections are located. The standard heater is a low-pressure steam converter, though electric or high-pressure steam water heaters are also available.

Permanent magnets located outside the tank provide continuous movement of containers through the water. A direct pull of 200 grams is required to dislodge an empty container when fully submerged.

Descriptive literature and further information are available by writing directly to the company at 41 California Street, Bridgeport 8.

•

Foreign Licensing Booklet

A new booklet entitled "Foreign Licensing—Questions and Answers," has been issued by the Pegasus International Corp., New York. It is designed to help the business executive gain a working knowledge of the problems of foreign licensing, and to serve as a guide in avoiding its pitfalls.

In question-and-answer form, the booklet presents the advantages and disadvantages of licensing, and goes into such problems as the selection of the right partner, the importance of securing patents, setting royalty fees (and collecting them in dollars), evaluating potential markets, and similar topics. Also, such alternatives to licensing as overseas subsidiaries and joint ventures with foreign firms are discussed.

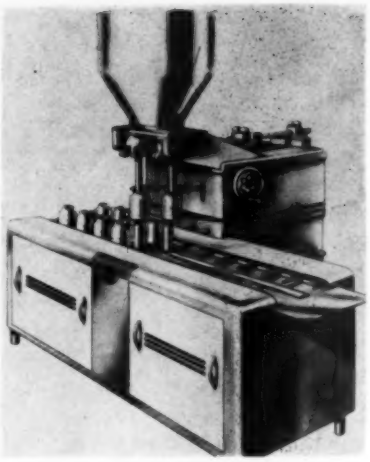
Copies of the booklet may be obtained by writing directly to the company at 1 East 53rd Street, New York 22.

Hope Introduces New Piston Filler

A new piston filling machine for high speed filling of small containers has been developed by Hope Machine Co., Philadelphia. The unit, called "Type 15 RC 1210," is already in use filling small metal containers with ¼-ounces of oil paint, 10 containers at a time, at speeds of 200 containers per minute.

Hope states that the machine will perform at similar speeds, filling ⅛-ounce to two-ounce containers with liquid or semi-viscous products such as creams, pastes, paints, salves, sauces, waxes, various food products, greases and many like items.

The new machine features a special Hope designed means of obtaining an inexpensive "Bottom-Up Fill" —accomplished with a special rising conveyor table and also features a high speed Rex table top cross conveyor timed with the filling cycle. There is a "no-container — no fill" control on the infeed conveyor. The piston assembly may be either single or double valve. Special manifold nozzles are provided with two to five nozzle tips for each manifold.



Further details may be obtained by writing to the company at 9400 State Road, Philadelphia 14, Pa.

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Antara PVP Booklet

A new 44-page booklet on PVP (polyvinyl pyrrolidone) has been issued by the Acetylene Chemicals Department of Antara Chemicals Division of General Aniline & Film Corp., New York. It gives complete data on compatibility, solubility, viscosities, and suggested uses for the material. One important section is devoted to a discussion of toxicity of PVP.

Copies of the booklet may be obtained by writing directly to the company at 435 Hudson Street, New York 14.

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Antell Debuts New Aerosol

Charles Antell Inc., Baltimore marketers of hair products, recently announced the first aerosol hair tonic. Called "Formula 9 in Touchbottom Dispenser for Men," the new product will sell at 98 cents for a 4.75 ounce container.

According to Charles Antell, president of the firm, the announcement "marks the first real innovation in the conservative hair tonic industry in the last seven years; and not since the introduction of lanolin has the trade been offered anything so new."

...aerosol
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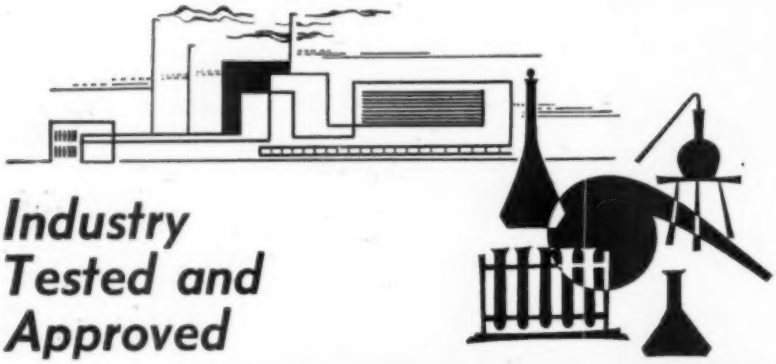
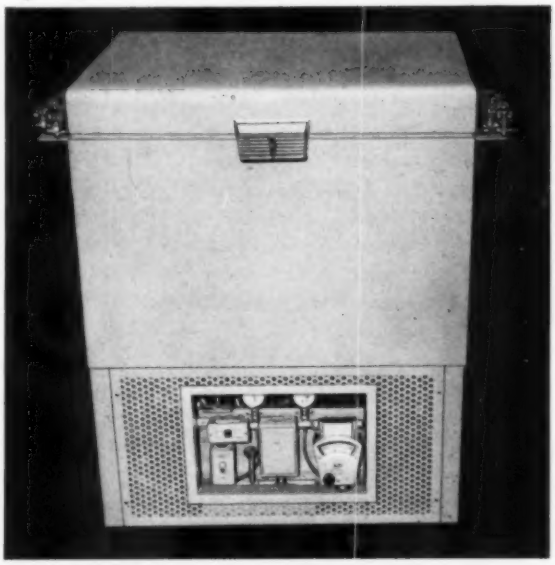


Industry Tested and Approved



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Nitrous Oxide Booklet

A new eight-page brochure describing the types of nitrous oxide installations specifically designed for the pressurized packaging industry is available from Ohio Chemical & Surgical Equipment Co., Madison, Wisc.

The flexibility of Ohio Chemical "Nitros-Pak" installations is discussed and illustrated to show how the selection of equipment, its installation, and the method of delivery are combined to meet the specific requirements of the user.

An outline of the manufacturing processes, filling procedure and standards, set by Ohio Chemical to insure quality, are included. This new brochure supplements a recently issued technical service bulletin by Ohio Chemical that supplies data on the chemical, pharmacological and physical properties of nitrous oxide. Copies of the "Nitros-Pak" installation brochure may be had by requesting Form 4774, and copies of the technical bulletin may be had by requesting Form GP-I from Ohio Chemical & Surgical Equipment Co., 1400 East Washington Ave., Madison 10, Wisconsin.

•

"Isotrons" in Small Containers

Pennsalt Chemicals Corp., Philadelphia, has announced that all of its commonly used refrigerants and propellants will be packaged in one- and two-pound disposable "Handi-Cans." Containers for Pennsalt "Isotrons" now range from the one-pound "Handi-Can" to tank trucks and tank cars, for the most complete line of packaging sizes available.

•

Linde Nitrogen Facilities

The Linde Co., New York, a division of Union Carbide Corp., recently put into operation a new nitrogen supply facility at Houston, Texas, and another at Tulsa, Okla. The new units are to be used to store large quantities of liquid nitrogen, and are an addition to the firm's nitrogen producing plant in Houston.

Rotary Gear Pumps

Availability of a Teflon rotary gear pump made of nickel has been announced by the Eco Engineering Co., Newark, N. J.

The ¾ inch "GearChem" pump in the new material will yield 10 gpm at 1750 rpm and operates effectively to 100 psi with viscosities to 5000 ssu. Features of the new unit include ¾ inch ports, reversible Teflon spur gears, internal Teflon bearings and pump casing and shaft of pure electrolytic nickel.

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MARSHMALLOW
CARAMEL
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FLAVORING
CHEESE SPREADS
SAUCES
SALAD DRESSINGS

Super Whip valves have been used for dispensing whipping cream and other foam products for 11 years. Super Whip now introduces its complete line of foam and liquid valves for the food industry. The largest particles will flow easily due to the Super Whip patented variable orifice. The housewife is not a marksman . . . give her a valve that dispenses your product directly on, not at, the plate . . . with a perfectly controlled rate of flow. Let us show you how Super Whip valves increase production rate and save labor. Our laboratory can put up your samples. Write, wire or phone today.

fast or slow / thin stream or heavy flow

patented leak detector plastic dust caps ... standard or your trademark design

SUPER WHIP VALVE CO.

4101 North Rockwell, Chicago 18, Illinois / JUniper 8-6300

THE COMPLETE *Aerosol* METAL CAP LINE

For - 1" Cup Mountings
- Standard And Extra High Valves

#1-S Dome Style—Plain or Fluted Sides—Over-All Height 13/16" Packed 2000 Pcs.

#1-BD Button Dome Style—Plain or Fluted Sides Over-All Height 7/8" Packed 2000 Pcs.

#1-X Dome Style—Plain or Fluted Sides—Over-All Height 15/16" Packed 2100 Pcs.

#HIP Plain Sided Stacker Style—

#HIF Fluted Stacker Style—Over-All Height 13/16" — Inside Valve Clearance 3/4" Packed 2100 Pcs. per Carton

#HIS High Stacker Style—Plain or Fluted Sides—Indented Flat Top—Packed 2000 Pcs. 30# Shipping Weight Over-All Height 15/16" Inside Valve Clearance 7/8"

Standard Colors — Red, White, Royal Blue — Gold Lacquer—Special Colors—Min. 50M, Exact Duplication Lithographing—Min. 500M, No Plate Charge Any Design

West Penn Mfg. & Supply Corp.
Brackenridge, Penna.

APPLY MORE THAN 100 AEROSOL VALVES PER MINUTE WITH THE CAPEM H-O-FV

If applying aerosol valves is a bottleneck in your packaging operation, here is your solution—the CAPEM H-O-FV.

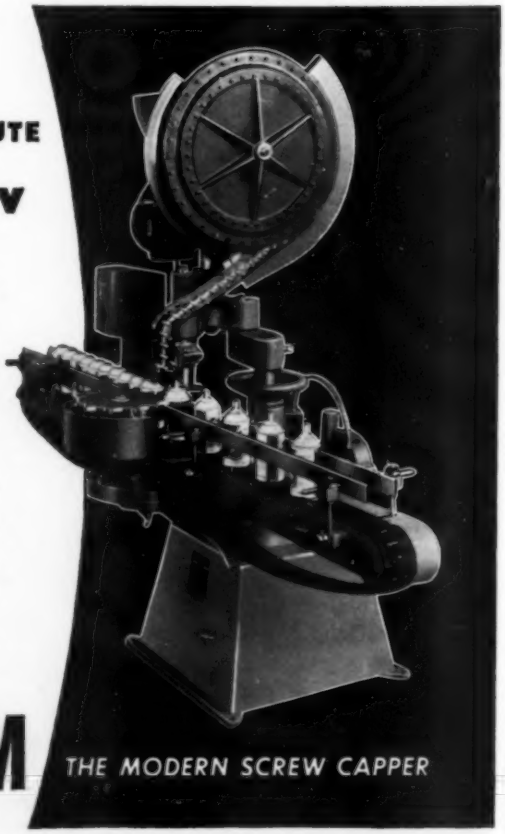
Rich Products Corp., Buffalo, N. Y., manufacturers and distributors of Rich's "Whip Topping", recently installed one of these machines. Production has increased and results have been most satisfactory since installing the H-O-FV on their aerosol container line.

The Model H-O-FV sorts and applies aerosol valves to whipped cream containers at speeds in excess of 100 per minute. Stainless steel and chrome-plated parts are used whenever necessary to comply with dairy industry regulations. Electric switch gear is mounted conveniently above conveyor to facilitate washing the line at shut-down time.

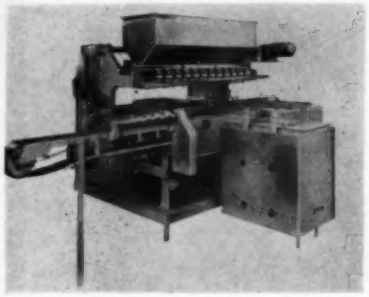
Changeover from one container size to another is simple and easy.

For complete information on the CAPEM H-O-FV and other Consolidated packaging machinery, write Sales Manager, Consolidated Packaging Machinery Corp., 1400 West Avenue, Buffalo 13, N. Y.

CAPEM



New Geyer Filler



A new filling machine that permits the operator to make change-overs to different size containers in 15 minutes or less, provides greater accuracy of fill, and reduces waste because of an exclusive "no container — no fill" device, has recently been developed by The Filler Machine Co., Philadelphia. The machine, called the Model SL-58, handles semi-liquid and semi-solid products and fills up to 250 glass, plastic or metal containers per minute by the bottom up or clean cut-off filling method. All types of containers are handled by the machine.

The spring lift rising table is set to the correct height for various containers by an adjusting screw and the simplified "no container—no fill" device (which keeps the filling mechanism from operating when there are no containers at the point of fill) requires no adjustment during change-over. In some cases, the only adjustment necessary, to change from one container size to the next, is to turn a small hand wheel. Containers are indexed through the machine by a combination walking beam and pin-type push bars. Other features include: a sturdily constructed feeding device built as a separate unit, cut-off pallets operated entirely by air, and no electrical connections. The "Model SL-58" is available in 4, 6, 8, 10 and 12 line models.

•

Aerosol Wax Products

A group of waxes specially suited for aerosol application is described in a new technical bulletin issued by Wax & Rosin Products, New York importers of "Hoechst Waxes." The waxes, which have been formulated for their physical and chemical properties, include those for both solvent and emulsion aerosol systems.

In its bulletin the company, which offers three waxes for solvent systems and three others for emulsion systems, lists complete formulation and physical data for each (including structure, color, oil absorption, gloss, and emulsification).

Copies of the technical bulletin are available by writing directly to the company at 42 Broadway, New York 4, N. Y.

National in Aluminum Field

National Can Corp., Chicago, last month signed a contract to make up to 25 million aluminum oil cans for Esso Standard Oil Co. The contract, between National and Reynolds Metals Co., marks National's first entry into the aluminum field.

Aluminum sheet for the cans will be made at the Listerhill plant of Reynolds in Alabama. National later may go into production of other aluminum cans.

If you would like to improve or expand your line of

COSMETIC and PHARMACEUTICAL AEROSOLS

you should request our new data sheet describing over thirty

DERMATOLOGICAL CHEMICALS

Including analgesics, anesthetics, antibiotics, antihistamines, astringents, antiseptics, fungicides, healing agents, hormones, quaternaries, rubefacients and sunscreens.

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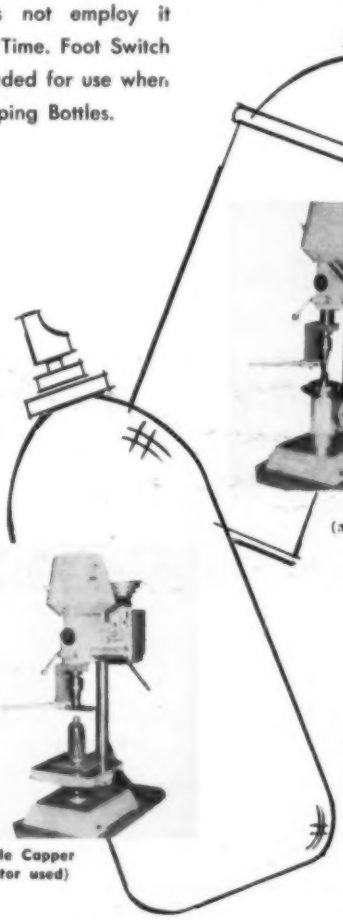
150 Doremus Avenue, Newark 5, N. J.

NEW COMBINATION

CAPPER

for AEROSOLS

BUILDER's NEW "Combination Drill Press Capper for Aerosol Bottles and Cans has a production rate of approximately 2-per-minute with Aerosol Bottles . . . 8 per minute with Aerosol Cans. BUILDER'S CAPPER can be used as a "Drill Press" where Aerosol Production does not employ it Full Time. Foot Switch included for use when Capping Bottles.



Can Capper (motor not used)

Bottle Capper (motor used)

Dimensions:
Base Size:
14" x 24"
Height: 30"
110 Volt AC
¼ HP Motor

Aerosol Bottle Capper	$208.00
Attachment for Can Capping	160.00
TOTAL	$368.00

BUILDER'S
SHEET METAL WORKS INC.
108-110 Wooster Street, New York, N.Y.
CAnal 6-5390

Aerosol bouquets

that have proved their effectiveness in the production of industrial and consumer products

MINT BOUQUET	No. 3121
APPLE BLOSSOM	No. 3122
OIL SWEET PEA	No. 3123
OIL WISTARIA	No. 3124
OIL GARDENIA	No. 3125
OIL BOUQUET E.T.	No. 3126
OIL BOUQUET P.C.	No. 3127
OIL BOUQUET H.D.	No. 3128
OIL BOUQUET K.L.	No. 3129
OIL BOUQUET H.C.S.	No. 3130

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Wheaton Introduces New Oral Inhalator

Wheaton's new oral inhalator measures 3⅞ inches tall and 1¼ inches in diameter.

Wheaton Plastics Co., Mays Landing, N. J. has introduced a new oral inhalator for aerosol application. Called the "Wheaton Nebu-Halor," the unit is specially designed to prevent accidental activation in the pocket or purse.

The one-piece oral inhalator serves as a protective cap. A twist of the fingers closes the cap to prevent contamination by lint or dust, thus eliminating the need for any supplementary cap or case. The bottle is plastic-coated glass. The unit is available from stock to fit all metering valves.

•

Merck Gibrel Concentrate

Merck & Co., Rahway, N. J., has announced a new "Gibrel" (gibberellin) concentrate specially formulated for aerosol packaging. The company points out that the improved formulation offers the following advantages: (1) lower handling costs because of increased concentration; (2) improved keeping qualities because it is essentially non-corrosive; and (3) additional plant claims.

A technical bulletin, describing the new formulation and listing prices, suggested label data, and additional plant uses for the material is available by writing directly to the company's Plant Products Department, Chemical Division, Rahway, N. J.

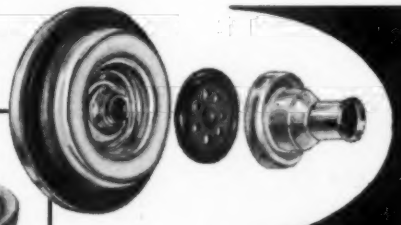
•

Benzoguanamine Available

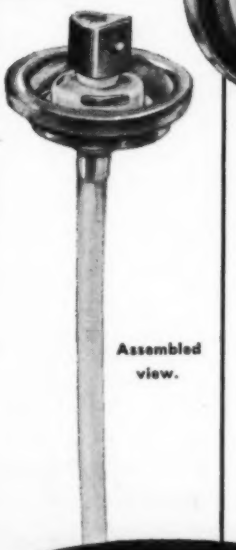
The availability of commercial quantities of triazine, benzoguanamine, has been announced by Rohm & Haas Co., Philadelphia. The material is of principal interest as a raw material for resins by reaction with formaldehyde according to E. H. Riddle, of the company's Special Products Department.

Benzoguanamine also is reported to have possibilities as an intermediate for chemicals for application in insecticides and pharmaceuticals.

Exploded view of OEL Aerosol Valve.



Positive operation
... no clogging with
the OEL AEROSOL VALVE



Assembled view.

Simplicity is the keynote of the OEL Aerosol Valve. It has only three parts (see exploded view)—the nearest approach to integral construction of any aerosol valve. The unique rubber diaphragm insures accurate sealing, freedom from clogging, and positive action.

The OEL Valve is used on many well known spray and foam products. Interchangeable touch top fitments, easily assembled to the 1" cup, control flow rates and patterns. The same valve is used for both pressure and cold filling with proven results in uniform spray rates and patterns. Advantages are:

1. Faster filling in pressure loading.
2. Minimum propellent loss.
3. Uniform flow rates due to "above-the-valve" control.
4. Safer with inflammable materials.
5. Simplified inventory control due to universal valve.
6. Mechanical break-up dispensing at no premium.

The OEL Valve is now adaptable for products pressurized with nitrogen.

OEL THE BETTER AEROSOL VALVE

Send for information and samples to enable you to evaluate the OEL Valve on your products. Specify container size and dispensing fitments desired.

We are also manufacturers of precision equipment for pressure filling of aerosol containers.

OIL EQUIPMENT LABORATORIES, INC. 600 PEARL STREET ELIZABETH, NEW JERSEY

aerosol perfumes & masking agents...

designed for the job!

The extensive facilities of our laboratories are available for all aerosol applications.

Consult Polak & Schwarz for any and all aerosol problems.

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druk pak inc.

36, Merkur Strasse
Zurich, Switzerland

Supplying internationally for aerosols

- Laboratory Equipment
- Filling Machines (Cold and Pressure)
- Valves (Liquid and) Foam/Cans and Glass Bottles)
- Product Concentrates
- Laboratory Service
- Advice and Consultation

Valve Clincher
Metal Cans and
Bottles
DP-104 and DP-104a

All Products manufactured to our own Designs, Formulations and Patents. Valves available from Germany and Italy—Filling Machines from Germany—Laboratory Equipment and Concentrates from Switzerland.

Publishers of "European Aerosol Survey," a quarterly periodical

Catalogues and Prices on Request.

O-I Develops New Rigid Plastic Container

OWENS-ILLINOIS Glass Co., Toledo, Ohio, a leading manufacturer of glass containers and a pioneer maker of plastic closures, fitments and other plastic items, has announced the development of a new rigid plastic container made from high-density polyethylene. Commercial production will begin this spring at O-I's Glassboro, N. J., plant.

"O-I research has been working on development of a machine for making plastic containers for a number of years, but introduction of high-density polyethylene in 1955 first made possible the successful production of the new container," Carl R. Megowen, O-I president, explained. "The machines which will be used when commercial production is begun are being made in our Alton, Ill., machine shop and are the result of O-I research."

To demonstrate the strength of the containers, a model uses two to support her weight and the weight of 25 New York telephone books.

Mr. Megowen said O-I is convinced the new plastic container has "important sales potentials and that it will take to market many new products that can't be properly marketed now for lack of a satisfactory package. Its cost will be comparable with other types of containers."

The O-I president said the new plastic container will complement the Company's line of glass containers, which furnish more than 60% of O-I's annual sales volume.

He said the advantages of the rigid polyethylene container include: it is light in weight; it is strong and rugged with a built-in pouring spout; because it is translucent, its contents can be seen; it has wide design possibilities, almost as wide as glass, and it can be produced in color merely by adding pigment to the natural polyethylene. Initially, the bottle will be produced in capacities from 12 through 32 ounces.

"O-I research indicates that presently the new plastic bottle generally *cannot* be used for packaging beer, carbonated beverages, perfumes, and solvent base products such as kerosene, motor oil, charcoal lighter fluid, and oil base paints," he added. "Tests with food products also have shown that the present plastic material offers some problems which raw material suppliers are working to overcome." Because of these problems, the container is expected to find only limited use in the aerosol field, at least through use of existing raw materials.

High density polyethylene was originally produced in Germany. As the first type of plastic with a high degree of crystallinity, it offers high strength and heat resistance, and its development has been hailed as the first major scientific break-through in the field since the development of nylon.

Although first production will be at the Glassboro plant, O-I plans to install machines for making the containers at its St. Charles, Ill., plastics plant later this year. The company also has plastics plants at San Jose, Calif., and Riverdale, N. J.

•

Scovill Appoints Burnett

Scovill Mfg. Co., Waterbury Conn., of which A. Schrader's Sons is a subsidiary, recently established a Cosmetic Container Division. To head the new division the company has named Chester A. Burnett, who was formerly works manager of the firm's General Manufacturing Division. William A. Harris has been named product manager of the new division.

SUN-LAC INC.
"Successful through Service"
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GRI-L-LITE
SPRAY TYPE
CHARCOAL
LIGHTER
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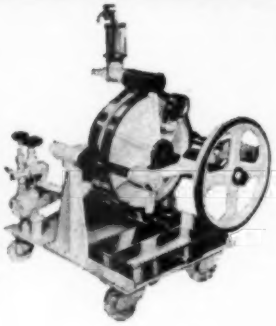
Fragrant
AIR
DEODORIZER
Aerosol
Packaging
ON
Cosmetics, Creams, Foams, Perfumes, Powders, Household Items, Insecticides, Industrial Products and Plastic Sprays.
We formulate and develop new products. Quality controlled productions—bulk storage facilities, pressure & "Cold Fill" facilities. Special plan for companies requiring national distribution. We supply samples and do experimental work.
Write or phone MA 3-7727 for full information.
Powders • Liquids • Emulsions

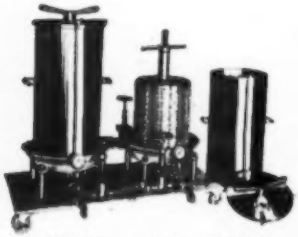
Step Up Your Production with ERTEL ASBESTOS DISK FILTERS

1. EBW MODEL PORTABLE FILTER



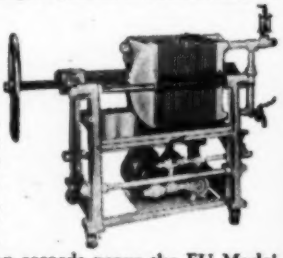
A highly efficient, readily portable filter that meets requirements for smaller capacities. Performance proven over the years in many hundreds of plants. Perhaps Ertel EBW model can economically speed up your production. Ask for full particulars.

2. ECD TWIN MODEL DISK FILTER



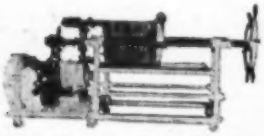
Typical of Ertel craftsmanship is this Positive Seal Multi-Purpose Disk Filter. The outstanding feature of independent filtering elements provides positive seal of any type filtering medium. Cylinder prevents loss of liquid—particularly well adapted for volatile liquids as well as many other ordinary filtering requirements. Sizes available to hold from 4 to 30, 12⅛" dia. asbestos filter disks, filter cloths or filter paper in each cylinder. Single cylinder models available.

3. EU MODEL UTILITY FILTER



The Ertel Filter that's designed to use asbestos filter sheets, filter cloth, filter paper or filter cloth and filter aid. Standard units in bronze, nickel plated, stainless steel or hard rubber circulatory system. Comparison and operation records prove the EU Model unmatched in design, versatility and operation-life. Experience has shown that the great majority of filtration problems can be solved by your consultation with our engineers. May we help you?

4. EUS MODEL STAINLESS FILTER



Built in sizes to accommodate from 10 to 100 asbestos filter sheets, filter paper or filter cloth. Capacity 5 to 150 gpm. depending upon product.

ASK FOR ILLUSTRATED CATALOG

Describes the complete line of precision built Ertel Liquid Handling Equipment for Industry.

ERTEL ENGINEERING CORPORATION

KINGSTON 2, NEW YORK

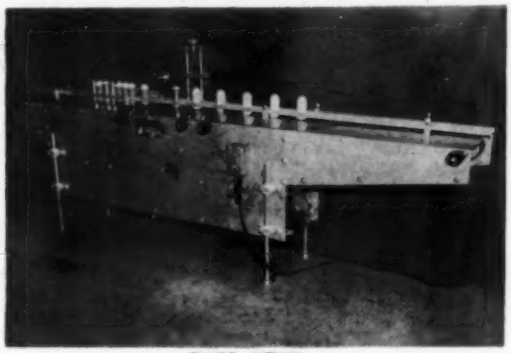
Branch Office & Showroom Located in New York City

COMPLETE LINE OF *Liquid Handling Equipment*

ERTEL Since 1922

CODE DATING MACHINE FOR AEROSOL CANS

Will mark the top or bottom or both at the same time



PATS. PEND.

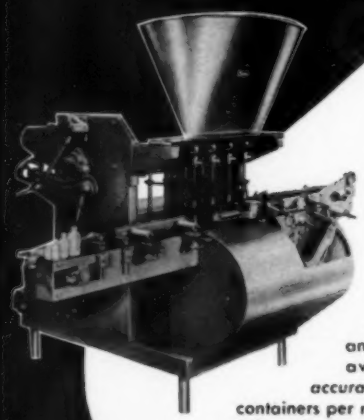
Kiwi® Coders Corporation announces a new power-driven machine for economically and automatically code dating the concave bottoms of pressurized cans or flat bottoms of other round containers. Can also be used as a work table for affixing parts to cans.

Send details on your specific marking problems.
Literature available on all types of applications

Kiwi® Coders Corporation

4027 N. Kedzie Ave. • Dept. AA • Chicago 18, Ill.

VERSATILE · ACCURATE MULTI-LINE FILLER



ESTABLISHED Hope SINCE 1908

Visit Booths 2319-21
At The Coliseum
May 26-30

TYPE 19A

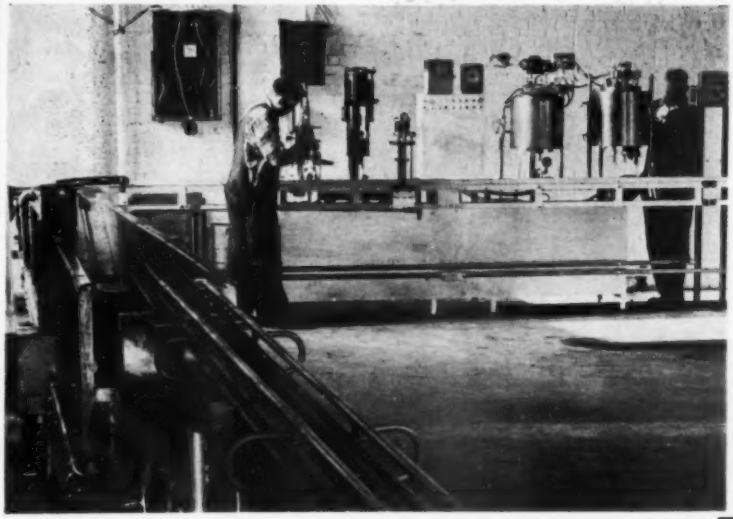
The 4 line model accurately fills 50 to 100 containers per minute . . . 6, 8, and 10 line models also available capable of *accurately* filling up to 250 containers per minute. Hope Type 19A Filling Machines are now in *profitable* use from coast-to-coast, filling liquids, semi-liquids, or viscous products in jars, plastic bottles or tin cans. For high speed, accurate filling machines look to the leader —

Write for catalog of our complete line

HOPE MACHINE COMPANY

9400-82 STATE ROAD • PHILA. 14, PA.

Powr-Pak Gives Finishing Touches to New Plant



One of the largest aerosol plants in the country has just been completed. Workmen are shown erecting one end of the completely separate aerosol pharmaceutical filling line, one of four production filling lines at Powr-Pak's new quarters in Bridgeport, Connecticut. The pharmaceutical line and food-filling facilities are contained in separate, washable white-walled rooms to meet all government purity specifications.

Complete production from all four lines is available now, and filling facilities are available for fluorinated hydrocarbon or nitrogen propellants, metal or glass containers and for pharmaceutical, food, cosmetic or chemical specialty products.

VAH Names Roy Webb

It has recently been announced by van Ameringen-Haebler, Inc., New York, manufacturer of perfume and flavor materials, that Roy E. Webb has joined the firm and will be responsible for process development and pilot laboratory operations.

For the past ten years he has been associated with National Aniline Division, Allied Chemical Corp., where he was a section leader in engineering research at the company's main plant and Research Center in Buffalo, N. Y.

Mr. Webb took his undergraduate work at City College of New York and received a Master's degree in Chemical Engineering at Columbia University. During the Second World War he served as a Captain in Combat Intelligence for the U. S. Army Air Force.

•

Amer. Cholesterol Gives Grant

American Cholesterol Products, Inc., Edison Park, N. J., a major producer of lanolins and lanolin derivaties, recently made a grant to the Philadelphia College of Pharmacy and Science. The college will make use of the grant in basic and applied research in the field of acetylated lanolin and lanolin alcohols and their function as emollients.

•

Velsicol Names President

E. T. Collingworth, Jr., has been elected president of Velsicol Chemical Corp., Chicago, replacing Joseph Regenstein, Jr., who becomes chairman of the board. Mr. Collingworth had been executive vice-president.

At the same time the company announced the election of John E. Kirk, vice-president and sales director, to the board of directors. Velsicol is a leading producer of Chlordane and of other insecticides, and of chemical solvents and gibberellic acid.

•

Givaudan Moves N. Y. Office

The Givaudan Corp. and its associate companies, Givaudan-Delawanna Inc., Givaudan Flavors, Inc., and Sindar Corp., will move its executive and sales offices and service laboratories to 321 West 44th Street, New York 36, N. Y. on May 19. The telephone number of the new office is Circle 5-0300.

The new facilities will include larger perfume, cosmetic, and flavor laboratories.

AEROFLEX® "P" DIP TUBES

QUALITY CONTROLLED—Every shipment laboratory tested for crack resistance

- Ideal for aerosols, atomizers, squeeze bottles and lotion pumps
- Odorless, non-toxic, resistant to most filler and propellant chemicals, crack resistant through exclusive formulation of materials
- No annealing necessary
- Close tolerances maintained
- Nylon dip tubes extruded for special applications

As one of the leading suppliers, ANCHOR offers a most reliable service and on-time deliveries. New illustrated brochure "Extruded Plastics" now available. WRITE TODAY on company letterhead.

ANCHOR

PLASTICS CO., INC.
36-36 36th Street
Long Island City 6, N. Y.
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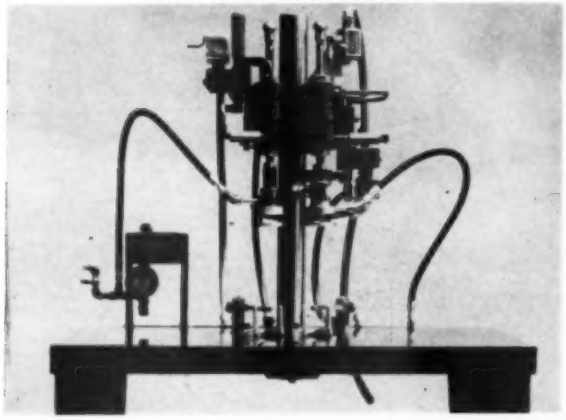
SEE US AT THE SHOW — BOOTH 1608 — SEE US AT THE SHOW — Booth 1608

FOR LOW COST, ACCURATE NITROGEN CHARGING AND TESTING . . . J.G.'S MODEL 14B



Combination charging and testing unit for rapid cycling-accurate pressure regulation. These units can be made single head for installation in existing line. Charging head will test pressure and fill dip tube. Accessories standard as in entire J. G. line.

HAND OPERATED NITROGEN CHARGING UNIT

- For lab production, fills 10-15 cans a minute.
- Balanced design for ease of fill

LABORATORY PRESSURE BURETTES • SINGLE AND DOUBLE PRODUCT FILL • LEAK TEST HOT WATER BATHS • CAN CLEANERS • EVACUATING UNITS • PROPELLANT PUMPS ACCUMULATORS • PROPELLANT SIGHT GAUGES • BULK STORAGE PUMPS • SPECIAL HOSE AND FITTINGS.

WE MAKE COMPLETE HAND AND AUTOMATIC LINES FOR LIQUID PROPELLANT AND NITROGEN FILLING

JG MACHINE WORKS
452-458 West 46 Street-New York 36, N.Y.
Production Machines Built to Custom Machine Craftsmanship

NATIONAL PACKAGING EXPOSITION
COLISEUM, NEW YORK, N. Y. MAY 26-30

Who's Who in the Aerosol Industry

Fred R. Gardner, sales manager of Aerosol Techniques, Inc., Bridgeport, Conn., custom packager, has retained enough of the drive which for years won him trophies in sports, combined with technical savvy to make him one of the better qualified sales executives in the field.

The ATI sales head was formerly at Stein Hall & Co., industrial chemical manufacturers, where he was for four years manager of the manufacturing division. He co-ordinated the organization's seven plants and served as liaison between the various departments. Previously Mr. Gardner was executive vice-president of Allied Research Corp., where he first worked in the aerosol field. Before that, as public relations director of the Medical Society of Westchester County, he was responsible for introducing a new approach to medicine through the development of a better understanding between doctors and patients.

A native New Yorker, Mr. Gardner was a seven-sport letter man and captain of all-city teams when a student at DeWitt Clinton High. This won him an athletic scholarship to Manhattan College, where he was center on the basketball team and won enough academic credits not only for a B.S. in chemistry but a degree in business administration.

From Manhattan he went on to obtain an M.A. at New York University and later took extension courses in industrial engineering at Columbia.

After college he was lured to professional basketball, a career which was interrupted by the war. He rose to the rank of captain and was taken prisoner in

Germany. On his discharge he returned to professional basketball for more than two years, playing with some of the leading teams in the East.

The ATI sales manager is extremely confident about the future of pressurized packaging, and sees pharmaceuticals as the next — and almost boundless — realm of expansion, and foods coming up fast. Within two years aerosol toothpaste will replace the collapsible tube dispenser, as was the case with shaving cream, he believes.

However, Mr. Gardner thinks the present aerosol packages are by no means the ultimate. Nor does he think the economics of the business can long continue without major change. The day of the basic filler who does not provide complete research and development service is gone already, Mr. Gardner holds, and he is proud of his own company's leadership in this direction.

The Fred Gardners live in Valhalla, N. Y., with their adopted daughter Margaret, nine.

Philip H. Sagarin, president and board chairman of V.C.A. Inc., Bridgeport, was one of the first in the manufacturing of aerosol valves.

During World War II, Mr. Sagarin was involved in the manufacture of ammunition components on a large scale. At the end of the War, because of the vacuum that was left by the cancellation of government production, there was a great need for a peace-time product. He saw the tremendous possibilities of the aerosol valve, and started the present company, which is currently one of the largest valve manufacturers serving the pressurized packaging industry.

Mr. Sagarin received his engineering training at Rensselaer Polytechnical Institute. He has spent all of his time since graduation in the manufacturing field in Rochester, Brooklyn, and Bridgeport. He is the originator of the "Aerosol Open" for the Eastern part of the industry, which is held as an annual affair in the late Spring of the year.

He has devoted a good deal of his time to community affairs, and has held several high positions in local organizations.

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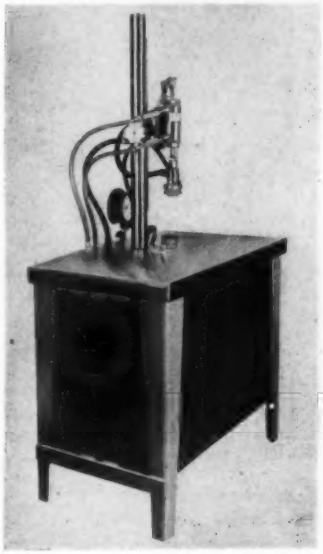

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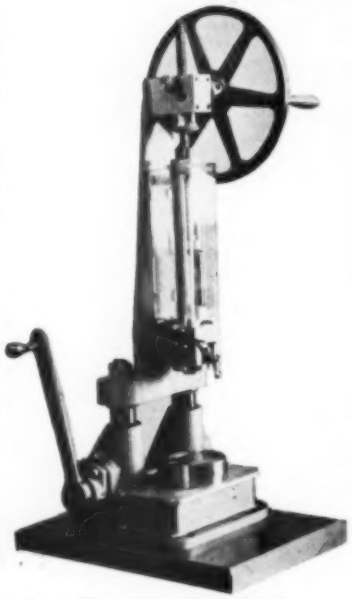

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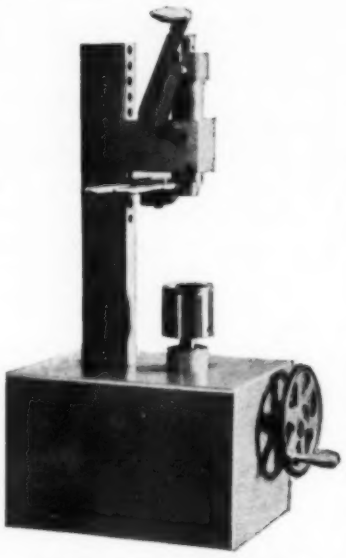

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Bermuda Aerosol Company

The legislature of Bermuda has been petitioned by an American and a Bermudian to be allowed to start a new company for the manufacture of aerosol valves at the Ireland Island Free Port, Bermuda. The company is to be called Meridian Productions (Bermuda) Ltd.

The principals in the new firm will be John Erskine Ayres, an inventor who holds the patent rights on the American "Presso" valve, and Robert D. Outerbridge. In addition to the manufacture of valves, the new company also hopes to do some processing, packaging, and marketing of a new product, the nature of which hasn't yet been revealed.

•

Canco Moves in Chicago

The American Can Company's Chicago headquarters has moved into a new building at 200 South Michigan Avenue. The company for many years has had its Midwestern offices at 104 South Michigan Avenue.

The company has signed a 20-year lease for 55,300 square feet of floor area. The space will include the 14th, 15th and 16th floors and half of the 13th floor.

•

D&C Club Honors Magnus

Percy C. Magnus, president, Magnus, Mabee & Reynard, Inc., New York, has been elected to an honorary membership in the Drug & Chemical Club, New York. For 40 years Mr. Magnus has been a resident member of the club.

Particle Size Analysis

(From Page 47)

cles according to size can be gained from microphotographs of samples collected in various portions of the instrument. (See Figure 2)

To facilitate the evaluation of this instrument a double image micrometer (DIOM), manufactured specially by the Oxford Research Group, was used. The DIOM produces two overlapping images of the microscope field as shown in the photograph (See

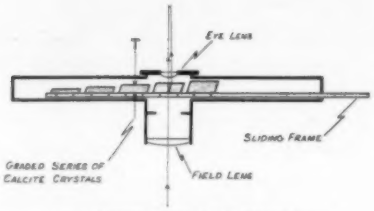

FIG. 2. Schematic diagram of ocular modified for use as a double image micrometer.

Fig. 1). These images are displaced with respect to each other by an amount ("D") which is proportional to the setting of the instrument. The uniformity of particles in a given field can be rapidly and accurately determined by setting the DIOM so that the majority of the images are just tangent, deviations from the mean size are readily apparent. The uniformity of particle size obtained with the Oxford analyzer is apparent from a photograph.

Evaluation assistance by John Quinn, of the Isotron staff, is gratefully acknowledged.

Pennsalt believes that this development will provide aerosol companies with a rapid and simple technique for analyses of aerosols.★

Handling Containers

(From Page 47)

from plastic should be avoided for work with glass or metal containers under pressure. If the plastic surface is convex it will be scratched, but in only one test did the glass penetrate a curved plastic face shield.

The danger of flying metal containers cannot be overemphasized. We made high-speed photographs of regular filled aerosol containers placed in a fire. Cans were found 300 feet from the fire, and on two occasions the steel tail gate of a pick-up truck 150 feet from the fire was ruptured by the impact of a regular, empty 12-ounce can.

Another safety consideration that is often overlooked is the reduction in the oxygen content of the air. If there is little ventilation in the working area and a large amount of propellant is released — either the usual aerosol propellant or carbon dioxide or nitrogen — so that the air contains less than 16% of oxygen, you can

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expect trouble, such as fainting. The normal oxygen content of the air is approximately 20%, and release of a large amount of inert gas will soon reduce it below 16%, which has been established as critical unless there is adequate ventilation. Working in areas of high humidity caused by steam also should be avoided.

One should not enter propellant storage tanks or mixing tanks before the vapor or gas has been removed with a continuous stream of air. Even then it is advisable to use an oxygen or compressed-air mask. For this type of operation workers should always work in pairs, one inside and the other outside, just in case something goes wrong.

Summary of Precautions in Handling Pressurized Containers

Simple equipment gives adequate protection against flying glass and small metal fragments. Protective screens should always be used with pressurized glass bottles and tubes. If the bottles or tubes are filled from a pressure tank, they should be wrapped in a towel in addition to the wire screen.

Shields made of safety glass should be placed to give protection in all directions where workers might be hit by flying fragments.

Safety eye glasses made from tempered glass should be worn at all times. These glasses may be obtained ground to your prescription.

Face shields should be worn in addition to safety glasses, and also leather gloves at all times when handling heated cans or glass equipment under pressure.

Adequate ventilation should be provided to prevent reduction of the oxygen content of the air in laboratories and filling plants where large quantities of propellant escape. Escaping steam or areas of high humidity should be eliminated for the same reason.

When propellant and mixing tanks are cleaned, they should be thoroughly aired, and workers should wear self-contained oxygen or air masks while in the confined area. Men should always work in pairs, one inside and the other outside, keeping in constant touch with each other.

A thorough study should be made of the conditions in every laboratory and filling plant. Safety is simple but very important.★

Aerosols Overseas

(From Page 66)

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the two million unit mark. Led by a progressive management and aided by its own distribution organization, this company believes that its aerosol consumer products should be consumer priced and has taken the lead in making them so. This will make the going tougher for new-comers and contract loaders, but the consumer gets the benefit and the aerosol market expands.

WE honestly acknowledge a more charitable view towards the European middleman's problem, confessing our previous errors. That problem is a part of a system and not a matter of one group getting more than its fair share. As we have found, a wholesaler to get his end price generally multiplies by three his cost from the manufacturer. Thus an item priced to him at $1.00, has to be sold for a minimum of $3.00. How is the difference split? Well, the retailer wants his 40% from the top down. This leaves $1.80. Then comes the competitive practice of 13 units for 12, or the "Bakers Dozen," and, not unlikely with new products, another will have to be thrown in for demonstration or personal use purposes. This reduces our $1.80 to around $1.65. After the wholesaler has taken off his 20% we are back to our original $1.00.

In the second place, the European wholesaler's lot is not an easy or inexpensive one. Generally, his market is small. A whole country is scarcely the population size of two or three large American cities and an order per call may result in only one or two dozen units. Mostly his salesmen have three weeks per year military service and three weeks vacation, all paid. Then come the holidays, of which there

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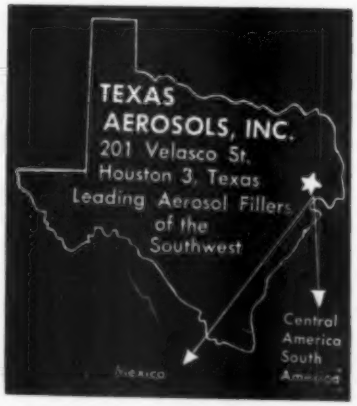

may be as many as a total of two more weeks per year. Because of customer interference, all Saturday sales are out. Thus, the wholesalers' salesman has to be good. For 36 or 37 weeks work per year, he is paid, at competitive salary, for 52. Nor do we find the retailer, with his 40% and "Baker's Dozen," rolling in riches. There are just as many bankruptcies among this group in Europe as in any other part of the world, and just as many credit problems, too.

But the system changes, imperceptible as it may seem. Chains become more evident and more predominant. Even the small drug stores band together defensively for greater purchasing power, since the larger department stores and grocery chains rely on a maximum mark-up of 25%. Only his local convenience and personal service keeps the small retailer alive in outlying sections. Whether the old system ideology had its roots in the invested capital and credit sources at the top, or sprang from the natural security-seeking conservatism of the retailers at the bottom, or was, indeed, the product of both, does not make much difference. The fact is, it is changing; and not principally due to any new, rival or challenging ideology, but simply because the underlying circumstances are changing. In an industrial age, the broader the market, the more secure is the system, and broader markets come about through reasonable credits, higher wages and lower prices. These are some of the new facts and circumstances appearing on the European scene.★

Aerosols in Review

(*From Page* 76)

eggs. " 'Don't seal them too soon after they're laid,' cautions Mr. Stadelman. 'Egg whites become cloudy if you do —it actually keeps in too much of the carbon dioxide. You should wait two hours or so.' "

The *Journal* reports that the oiled eggs are worth more money than untreated eggs. "Purdue tests show that sprayed eggs lose less than one-half as much weight as non-oiled eggs, stored 14 days at 55°F. They rated high grade A's after two weeks, while untreated ones were on the verge of Grade B."

•

THE problem of rising tinplate prices for aerosol cans and other container applications is discussed in the March 22 issue of *The Statist*, leading English financial and commercial review. The periodical has this to say about future expansion of tinplate as a packaging material:

"There seems to be one fly in the ointment. That is, the trend in tinplate prices, which may also check the extension of metal containers in other directions. While the price of tinplate has been steadily rising over the past two or three years, the tendency is for the other packaging materials to come down. Until very recently can makers have had frequently to rely on imports to supplement home supplies of tinplate which have been inadequate. But since the new Velindre mill got into its swing last year, the tinplate makers have been unable to sell all they could produce. The can makers and the canners say that the remedy is to change the tinplate price policy pursued in recent years with the approval of the Iron and Steel Board. It is alleged that present policy is encouraging packaging manufacturers to look for alternative materials."

Frankfurt Meeting

(*From Page* 51)

dustry throughout Europe and the British Isles. To our great relief, this suggestion was adopted. We hope this small new committee may meet promptly and that its work may prosper. With so many claimants in the field, we can well imagine the difficulty a representative of CSMA might have in trying to resolve which European association to recognize. It is just as though the U. S. were divided into five or six geographical sections, each with its own local CSMA claiming a territorial jurisdiction in the other's section. So far as technical problems of the industry are concerned, they *are* truly inter-

national. The administrative ones seem to present the major stumbling block.

Francois Harlan, of Establissement de Trévise, Paris and also one of the editors of the leading French trade publication *Parfüms, Cosmetiques Savons*, then informed the meeting about the first steps taken to organize a French association. This is to be a small group (consisting only of company members) and current plans call for a technical committee and an aerosol information service. The French association is looking forward to establishing relations with similar groups in other countries, and Mr. Harlan said that similar groups were in the process of being formed in the U. K. and Italy.

At the afternoon session Prof. Haase spoke a few words on his new CO_2 manufacturing process which, he claimed, yields a product which gives a constant pressure in the container until all product has been exhausted. We will have more on this later. Following Prof. Haase, Dr. Hoffman of Precision Valve International read a German translation of the paper on "New U. S. Aerosol Developments" which Mr. Delmore presented at the IAA meeting in Zurich.

Thus ended the proceedings, the outcome of which will remain unclear for some time. Dues was fixed at 300 Marks per year (about $75.00). No officers were named, though there was a board of directors elected. The legal incorporation is to be deferred pending the meeting between the small committee from the board and representatives from the Zurich and French groups. With all the tensions and confusion evidenced at the meeting, it might be advisable to let the matter cool off for a while.★

Nitrogen Propellant

(*From Page* 60)

Although there is still considerable work yet to be done with regard to developing ideal coffee concentrates suitable for the aerosol medium, preliminary work looks very promising indeed even at this early date. Several of the largest coffee manufacturers in the United States are busily engaged in developing suitable concentrates, and it is quite possible that an aerosol coffee will be on the market before the end of 1958.

Toothpaste concentrates must be specially treated by toothpaste manufacturers in order to make them suitable for the nitrogen medium. However, experimental samples can be made by simply thinning down conventional toothpaste with sorbitol and/or glycerol. The viscosity of the finished product is fixed in relationship to the flow rate desired. At the present time in the United States nearly all of the largest toothpaste manufacturers are already marketing nitrogen toothpastes. It is anticipated that well over 50 million nitrogen toothpastes will be marketed in the remaining months of 1958 alone.

There is also a great deal of interest on the part of chocolate syrup manufacturers in this new compressed gas medium. The advantages are quite obvious — the elimination of sticky containers, of drip from the lip of the container, no contamination by foreign material, and the elimination of the possibility of mold due to air exposure, etc. Several of the major U. S. chocolate companies are presnetly investigating this matter, and since the total market for chocolate syrup in the U. S. is in excess of 400 million units per year, this market certainly looks very promising.

Of course there are other products being considered, but the medium is so new that concrete examples and samples of many other potential products for aerosol packaging have not as yet been reproduced even on a laboratory basis. Some examples of products which would be suitable for this medium, are as follows: measured food stuffs, baby oil, automobile wax, furniture polish, hand creams, liquid detergents, sunburn preventatives, vitamins, and pharmaceuticals.

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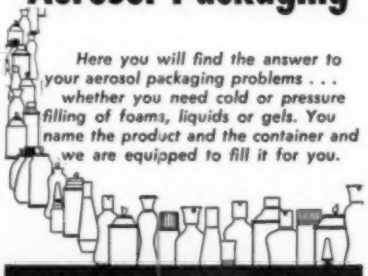

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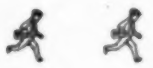

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accurately measuring the amount used. This is extremely important in dispensing medicines and food stuff, such as liquid sugar substitutes for special diets, etc. It is also noteworthy that compressed gas aerosols provide a completely sterile method for dispensing pharmaceuticals and medicines. Tests have been run and the concentrates have been carefully examined for bacteria count. It has been found that it is completely possible to package certain concentrates of medicinal nature in compressed gas aerosols and then pasteurize the entire contents. Subsequent tests have indicated that even as long as six months after pasteurization the bacteria count in a compressed gas aerosol is less than the bacteria count in a freshly pasteurized container. Thus inhibition of mold and bacterial growth is completely feasible with compressed gas containers.

Though this paper deals exclusively with nitrogen as a compressed gas, other inert gases are also being evaluated. Some of these are helium, argon and krypton.

Naturally there still remains considerable work to be done, particularly with respect to foods. However, the compressed gas medium looks so promising that many of the large food and beverage concerns in the United States have full scale programs under way in an effort to ensure the eventual production of a safe, trouble-free package.★

Packaging Show

(*From Page* 60)

attend both the show and the conference, the latter will be in session only in the mornings. It will open at 9:30 a.m. on Monday, with meetings beginning at 9 a.m. on Tuesday and Wednesday.

The registration fee for the exhibition will be $2, payable only at the registration desk of the show. Rapid registration tickets, to shorten the time required for registration, may be obtained from Clapp & Poliak, Inc., 341 Madison Avenue, New York 17, N. Y.

Subjects for the conferences include a talk by John C. Suerth, general manager of manufacturing, and E. N. Burnett, chief engineer, both of Gerber Products Co., who will tell how their company has been able to maintain profits in the highly competitive baby food market. "Systemated" packaging at Lewis-Howe Co., St. Louis will be the conference session topic on May 27. W. T. Dooley, Jr., vice-president; Robert B. Etter, Jr., plant superintendent; and Philip H. Lanham, engineer, will review the company's manufacturing techniques.

The final conference session will hear a talk on integrated material handling at the Ford Division of Ford Motor Co. by C. L. Hanchett, supervisor of material handling, engineering and inventory planning and handling, and W. A. Albrecht, superintendent of handling methods and equipment.★

A Correction

On page 15 of the April issue of *Aerosol Age*, in the article on "Pharmaceutical Aerosols," there appears the line "A stainless steel container was substituted for the hazardous glass vial." This reference to the glass vial being *hazardous* should be interpreted as only being in relation to the necessary rise in pressure to which the newer Riker formulation was increased. It should be pointed out that the glass container can be considered "hazardous" only at the 45-50 psig for the new formula, and that the manufacturer's recommended pressure of 25 psig can easily and safely be accommodated by the standard coated glass containers.—*The Editor.*

Stainless Steel

(*From Page* 52)

metered valve, is ideal for dispensing medication, for inhalation, throat sprays, nose sprays, and other topical applications. The stainless bottle can be made for the standard 20mm valve which is the size used on glass bottles. The 19mm (13-½cc bottle) and 18mm (10cc bottle) openings are standard sizes for the Emson metered valve. They are used for various purse size products, both pharmaceutical and cosmetic, and are now being offered together with special oral and nasal adapters as a complete package.

Stainless steel lends itself to various durable attractive finishes. Its own natural appearance, in either a lustrous or a satin finish, can be very attractive with an etched or two-tone design. This could very well lead to a trend away from brass or gold, which is associated with lipsticks, a common less expensive purse-type package. Stainless steel can also be finished with a durable "epon-type" enamel in various pastel colors. White makes an ideal finished package for drug items (nose sprays—oral inhalators, etc.).

Stainless steel bottles presently used with the metering valve (as a complete package with special nasal —oral adapters, or cosmetic cases) cost little more than other presently available small containers. Since the cost of the package of a "pressure dispensed" product should be figured on a total cost of all the elements, the slight increase for using stainless steel amounts to but a small percentage in the total cost. However, the results from savings made possible because of the durability of this bottle—and the wide range of formulations and pressures that are available to the marketer—can be the basis for a sound argument that the best package in the long run can be least expensive.

Emson Research is optimistic over the possibility of developing larger "stainless" packages to sell at a price which will permit the marketing of numerous new products. The greater strength and compatibility of stainless steel (plus the use of nitrogen) should result in some interesting developments in the near future.★

Hair Spray Dangers

(*From Page* 34)

proportion of the paper was devoted to a rehash of the literature concerning the problems arising from the injection of high molecular weight substances. It should have been comparatively simple to test the hair spray by having the animals inhale the aerosol and then checking for possible lung damage; this was not reported as having been done. The experimental and clinical work was not by any means conclusive. Nevertheless, interested members of the cosmetic industry, jealously guarding a well-deserved reputation for safe products, would be well-advised to in-

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vestigate this matter of hair spray inhalation.

From a publicity standpoint, the principal damage to the consumer market appears to be because of publication of various versions of the article in the columns of daily newspapers in a number of cities in the Midwest (St. Louis, St. Paul, etc.). Many of these stories have been slanted toward the same "sensational" point of view as the recent rash of articles on whether or not cigarettes contribute to lung cancer (an argument that was carefully documented with thousands of study cases).

Aerosol experts largely discount the animal research reported (in the article) which these doctors believe demonstrates that cancerous lesions can be caused by the subcutaneous injection of PVP in guinea pigs. They point out that sugar, penicillin, and a number of other common substances will produce similar effects when injected under the skin. It is also reliably reported that the FDA (which has approved PVP and the other polymers and resins for cosmetic uses) and the American Medical Association are skeptical or at least non-committal about the findings of the article, but at this writing these reports haven't been confirmed.

Altogether, it is estimated that 500 million units of hair spray have been used in the U. S. and this particular product type is currently the largest unit seller of all aerosol product types. Industry spokesmen point to this tremendous sales volume as an indication of the relative safety of their product. Also, it is pointed out that there has been more clinical data assembled and published on PVP and other hair spray components than most other ingredients in the aerosol package.★

Consultant's Corner

(*From Page 69*)

consider that his first responsibility is output of units and that he is the one who has the authority to say yes or no as far as a shut-down is concerned. This may sound like confusion compounded, but it is an even bet that this exact condition can be found someplace in one out of every three plants in the aerosol industry.

IN addition to this particular type of confusion (the result of supervisors not knowing the management scope of their work), there is also technological insufficiency and/or limited operational understanding, underlying low morale in many cases. The cure of this must lie in training and more training until the condition is corrected. Supervisors and maintenance personnel are the ones who must receive the greatest impact of this training, but the effect of good explanations of the principles involved in the various phases of production to the entire work force will be both surprising and gratifying.

The third source of confusion (and certainly as important as the other two) results when production workers are told what to do and given general instructions when they first come on a job, but are not told specifically how to do each part of each operation. The difference between good and bad production output can reside in as simple a thing as whether an article is grasped palm up or palm down—multiply this by all the workers and the possible ways of doing things, and it will not be surprising that morale will sink if there is a constant cry for better production, without instructions in how to get it (except by working harder).

It will generally be found that morale will soar if all personnel are conscious that they know their jobs more than adequately, and that there is no question as to who is responsible for what and who has the authority to decide a course of action in any given case.

When output lags—harder work in the same old way may remedy the trouble to some degree, but knowledgeable relaxed effort expended with maximum efficiency will be a far better answer. It will happen when morale goes up and vice versa—each will feed the other until real enthusiasm for a good job well done will replace apathetic drudgery.★

New Aerosol Patents

The data listed below is only a brief review of recent patents pertinent to the readers and subscribers of this publication.

Complete copies of these patents may be obtained by writing to the publisher of this magazine, Aerosol Publications, Box 31, Caldwell, N. J., and remitting 50c for each copy desired. For orders received outside of the United States the cost will be $1.00 per copy.

2,827,330. Spray Guns. Issued March 18 to Jahn W. Baur, Glenview, Ill., assignor to Binks Manufacturing Co., Chicago, a corporation of Delaware.

In a spray gun structure which comprises a body portion, a handle therefor, a spray head portion for the gun and a spray nozzle part where the coating material handled in the gun is sprayed, the combination therewith of heat insulating material disposed between the body portion of the gun and the spray head portion of the gun, means for securing said body portion and spray head portion together in heat insulated relationship to each other, inlet means carried by said spray head portion for connecting said spray head portion to a source of liquid coating material under pressure, inlet means carried by said spray head portion on the remote side of said insulating material from the body portion for connecting said spray head portion directly to a source of heated fluid exterior of said gun, said spray head portion being provided with a passage connecting said coating material inlet means to the spray nozzle part of said spray head portion, said spray head portion also being provided with a passage connecting said heated fluid inlet means to the interior of said spray head portion, said passages being in heat interchange relationship in said spray head portion.

•

2,827,193. Closure Cap for Containers. Issued March 18 to Warren N. Martin, Prairie Village, Kans.

Packaging means comprising a container having a substantially cylindrical portion open at one extremity thereof and provided with external threads; a reusable hollow closure cap of resilient material for said container adapted to fit over said one extremity of the latter and provided with internally extending structure of which at least a portion is adapted for threading engagement with said threads of the container; and a single pair only of opposed, external projections on the container engageable with opposed parts of said structure to prevent retrograde rotation of the cap upon the container when the cap is fully screwed upon said threads of the container, each projection having a face substantially radial to said portion of the container and a surface substantially tangent to the curvature of said portion of the container extending from the outermost extremity of said face, said cap being distortable without breaking from its normal configuration upon application of squeezing force thereto to a temporary configuration disposing said parts of said structure a greater distance apart than the distance between the outermost extremities of said projections, whereby the cap may then be rotated upon the container in a retrograde direction for removal therefrom.

•

2,828,055. Liquid Dispenser Cap. Issued March 25 to Wendell H. Pearson, Alcester, S. Dak.

A liquid dispenser cap comprising a cap body, said cap body including a longitudinal depressed groove therein, a spout member positioned in said groove, said spout member including an end tapered portion and a side tapered portion, said body having a tapered opening adapted to register with either of said tapered portions, an opening in said spout passing through said end tapered portion, a boss attached to said spout opposite to said side tapered portion, said body including a pair of slots, a pin attached to said spout and received in said slots, springs bearing against said pin.

Trade Mark Applications

Applications for registration of the following trademarks were published in recent issues of the *Official Gazette* of the U. S. Patent Office. In not all cases are there strictly aerosol trademarks, however many of the products listed below come within the category of those for which a possible future use in aerosols is foreseen.

Baby Boquet, for air deodorants and sanitizers. Filed Jan. 25, 1957 by Aerosol Pak Corp., Toledo, Ohio, to Spray Dispensers, Inc. claiming first use Dec. 20 of previous year.

Winter-Sett and Summer-Sett, both in fancy script for hair fixatives. Filed Sept. 9, 1957 by The Procter & Gamble Co., Cincinnati, Ohio, with first use Aug. 9 of same year.

Sunfrost, for suntan lotion. Filed March 18, 1957 by Florence Chadwick, New York, claiming first use in February of same year.

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LINEN AND LACE, for perfumed sachet in liquid form for spraying on linens, handkerchiefs, and the like. Filed Jan. 2, 1957 by John H. Breck, Inc., Springfield, Mass. with first use Dec. 26 of previous year.

SPRAYAID, for antibiotic spray bandage. Filed Aug. 9, 1957 by Chesebrough-Pond's Inc., New York, claiming first use July 9 of same year.

HUSH, in a target design, for liquid preparation applied as a film forming spray for the purpose of eliminating squeaks and binding of rubber-faced associated parts and for lubricating and protecting the rubber facing of such parts. Filed April 8, 1957 by Garry Laboratories, Inc., Buffalo, N. Y., with first use claimed March 25 of previous year.

SPRAY TAN, for cosmetic products especially for tanning the skin. Filed March 27, 1957 by Aktiengesellschaft fur Lizenzverwertungen "Alvex," Coire, Switzerland, with a priority claimed under Swiss registration dated Dec. 11, 1956.

HAIRLAC, for fixative for coiffures. Filed Aug. 15, 1956 by The Nestle-Le Mur Co., New York, claiming first use on Dec. 9, 1943.

SMART SET, for hair spray and creme shampoo. Filed Nov. 4, 1957 by Bronson Products Co., Chicago, claiming first use March 15, 1956 on hair spray.

SMART SET, for wave set, hand lotion, and lipstick. Filed May 31, 1957 by Colgate-Palmolive Co., New York, claiming first use Feb. 2, 1957.

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SQUIRTAL, for all purposes, all angle, unbreakable plastic pressure containers of the squeeze type for dispensing liquids. Filed May 27, 1957 by Henry A. Dewenter, South Pasadena, Calif. with first use May 9 of same year.

LAVISH, for sachet spray, namely, a lavender fragrance for lingerie, linens, kerchiefs, drawers, chests, and wardrobes. Filed July 1, 1957 by Reefer-Galler, Inc., New York, with first use claimed for Nov. 19 of previous year.

CELESTIAL, for perfumes and colognes. Filed Aug. 23, 1957 by Campana Sales Co., d.b.a. Anjou, Batavia, Ill. with first use reported for June 20 of previous year.

RED TULLE, in script, in a heart design, for perfume, toilet water, and cologne. Filed Aug. 20, 1957 by Baritz, New York, with first use claimed for July 16 of same year.

VERY SMART SET, for hair set and coloring preparation. Filed March 29, 1957 by Carter Products, Inc., New York, claiming first use March 5, of same year.

PAUSE, for personal deodorants, hair lotions, prefumes, colognes, and various other cosmetic products. Filed Aug. 5, 1957 by Chesebrough-Pond's Inc., New York, claiming first use May 21, of same year.

SPRAYWAY, for glass cleaning composition to be applied by spraying. Filed July 27, 1956 by Tru-Pine Co., Chicago, claiming first use in July 1949.

•

Guenther Film Premiered

Fritzsche Brothers, Inc., New York, showed a preview of its new colored motion picture "Essential Oils of Africa" at a cocktail party for the trade press, March 27th, at the R.C.A. Johnny Victor Theatre, New York. The film, made by Dr. Ernest Guenther, vice-president and technical director of the New York essential oil and aromatic chemical firm during his recent six-months survey of South-eastern Africa and its adjacent islands, is a colorful documentation of essential oil production in that part of the world. Running commentary, with appropriate musical background, made it a most interesting and educational presentation. In addition to many views of scenic beauty, native life and wild animal sequences, the film also presented various aspects of plant cultivation and essential oil production.

John L. Cassullo, president, and Dr. Guenther were presented to the audience, each spoke briefly, and Dr. Guenther conducted a question and answer period at the conclusion of the film.

ATI, Western Join Facilities

Coordination of the production and research facilities of two of the country's leading custom aerosol loaders, Aerosol Techniques, Inc., of Bridgeport, and Western Filling Corp. of Los Angeles, to achieve greater capacity, efficiency, and major economies, was announced early last month by H. R. Shepherd and John L. Marana, presidents of the respective companies.

While associating their production and service forces, the two organizations will continue to function individually on the corporate, administrative, and other levels. Together they will be able to offer a combined annual filling capacity of 75 million units and a combined plant area of more than 150,000 square feet.

Collaboration and interchange of service and technical personnel will be effected for the maximum mutual advantage, it was stated. In making the joint announcement, both Mr. Shepherd and Mr. Marana stressed the benefits to be derived from the coordination which will make available to aerosol marketers the best of each company's know-how.

One of the first developments arising out of the new association will be the addition, by Aerosol Techniques of an aerosol food division in Bridgeport in the near future. Western has been a pioneer in the pressurized food field and has expanded markedly in this direction.

The agreement was formally approved at a meeting in Los Angeles. The heightened demands for sales service on all levels, warehousing problems and operational costs dictated a coordinating of research and production facilities, it was reported.

•

Phillips Bergstrom Dies

Phillips B. Bergstrom, board chairman of the Sterling Seal Co., Erie, Pa., died March 22.

•

Wood Appoints L. M. Reese

L. March Reese has been appointed regional general manager of the Canadian Eastern Division of G. H. Wood & Co., Toronto.

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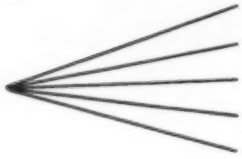

CLASSIFIED ADVERTISING

Rates for classified advertisements are ten cents per word, $2.00 minimum, except those of individuals seeking employment which *Aerosol Age* will run without charge. Check must accompany all classified advertisements. Address all replies to Classified Advertisements with Box Number, care of *Aerosol Age*, Box 31, Caldwell, N. J. Closing date: tenth of month preceding month of issue.

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Honor Canco for Safety

Twenty-seven plants and other locations in American Can Company's Canco division have been cited by the Can Manufacturers Institute for completing 1957 without a disabling injury accident.

The recognition included safety award plaques to 13 container plants "for outstanding achievement in accident prevention" during the year and certificates of merit for "exceptional performance in accident prevention" to 14 smaller locations.

Plant locations awarded plaques are Fort Smith, Ark.; Chicago, Ill.; Denver, Col.; Salem, Ore.; San Diego, Calif.; Wilmington, Calif.; Arlington, Tex.; Hoboken, N. J.; Terra Haute, Ind.; Portland, Me.; Maywood, Ill., and Kauai and Kahului, Hawaii.

In addition, Canco's plant in Kansas City, Mo., and machine shop at Geneva, N. Y., received plaques in their respective CMI divisions for making the greatest improvement in safety records during the year.

•

Wallerstein Names Emelin

Wallerstein Laboratories, New York, a subsidiary of Baxter Laboratories and a major supplier of aerosol antibiotics and pharmaceutical raw materials, has named Arthur C. Emelin to be president and chief executive officer. He succeeds H. E. Smith, who became board chairman.

Mr. Emelin had been general manager of the J. B. Roerig & Co. and earlier served as director of operations for Chas. Pfizer & Co.

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Economic Poisons Laws

The seventh revision of the "Compilation of Economic Poisons Laws" has just been published by the Chemical Specialties Manufacturers Association. The revision contains all laws enacted and regulations issued since the last revision and brings the compilation complete to January 1, 1958. A new index, tabulation of laws and lists of officials are included.

CSMA members having the membership copies of the compilation will receive their copy of the revision without charge. Additional copies of the revision will be $5.00 to members and $10.00 to non-members.

The revision is available from Chemical Specialties Manufacturers Association, 50 East 41st Street, New York 17.

Webb Acquires W. J. Bush

W. J. Bush & Co., Inc., Cos Cob, Conn. the American branch of W. J. Bush & Co., Ltd., London, England, has been acquired by R. D. Webb & Co., a newly-formed corporation. The new company, which will take over Bush's central and two branch offices, is headed by R. D. Webb, who had directed the affairs of Bush in the U. S.

OVER THE TRANSOM

Harvey C. Tull, manager of aerosol products, Crown Cork & Seal Co., examines the new valve and six-ounce Crown Spra-Tainer in which a number of major brand toothpastes are being packaged.

AS will be readily evident in a number of feature articles in this issue, the chief subject of interest these days is the nitrogen aerosol, and particularly nitrogen-powered toothpastes. Nearly everyone in the industry who is not in nitrogen aerosols already is preparing to go into some phase of nitrogen activity, and by this time next year toothpaste will probably be the biggest single pressure-packaged item.

The advantages of the aerosol over the tube are fairly obvious, but for the benefit of the Collapsible Tube Manufacturers Council and a few others who may not yet again: Probably the major advantage is convenience, combined with that of taste. Add to these the fact that the brand name is always in sight (and can never be folded into the package) that there is no chance of leakage, and the tremendous economy factor, and you have the makings of a fantastic aerosol toothpaste market.

So far chief beneficiaries of the vast rush (by major toothpaste marketers) to get a good product on the market have been Crown Can, which has supplied its "Spra-Tainers" for at least nine of the first brands; and Precision Valve Corp., which, to our knowledge, has supplied all of the toothpaste valves to date. (There's more on Precision in a feature article in another part of this issue).

But from where we sit it looks as though this whole nitrogen development will instill new activity into all phases of the aerosol industry. By the end of this year, look for a whole new range of pharmaceuticals, all kinds of lotions, creams, and ointments, plus a whole series of exciting new food products to appear on the market. In fact, there appears to be no limit to how far the market can go—now that toothpaste has provided such a "splash" in the whole packaging industry.

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Two of the major marketers of hair products for men, Wildroot and Charles Antell, have come out with nitrogen-powered hair products, and this may herald another market rush for this particular product. Wildroot's product, "Cream-Oil Hair Tonic," is in a six-ounce container and will retail at 98 cents.

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The Fine Chemicals Division of Shulton, Inc., Clifton, N. J., which recently bought the Bridgeport line of aerosol insecticides and the "Good-Aire" room deodorant line (from Bridgeport Brass) will go in for a big advertising splash to promote the line this summer. The company will be one of the sponsors of the Arthur Godfrey show, and will have a widespread campaign in drug and supermarket merchandising magazines.

Now are you satisfied that an aerosol container holds more than a tube?